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Albemarle Purchases Halifax Paper Mill

Large Expenditures to Be Made On Roanoke Rapids Plant At Roanoke Rapids, S. C. — Capacity of Mill to Be Increased In Excess of 100 Tons of Pulp Per Day — Another Paper Machine Will be Installed In Future.

H. W. Ellerson, president of the Albemarle Paper Manufacturing Company, Richmond, Va., announces that his company has concluded negotiations for the purchase of the plant of the Halifax Paper Company, at Roanoke Rapids, N. C. Warren T. White, general industrial agent of the Seaboard Air Line Railway, participated in the negotiations extending over a period of several weeks.

Adds Impetus to Development of South

This is the sixth large pulp and paper development to materialize in Seaboard territory during the last eighteen months. The Roanoke Rapids development, which will employ 750 men, adds further impetus to the rapidly developing recognition given the south-eastern part of the country as desirable for pulp and paper manufacture.

Large Expenditures To Be Made

Large expenditures will be made on the Roanoke Rapids mill, increasing its capacity considerably in excess of 100 tons of pulp per day, a part of which will be used in the manufacture of paper at Roanoke Rapids and a part shipped to Richmond by rail for conversion into paper in one of the Albemarle's plants. Later, it is the company's intention to install another paper machine in the Roanoke plant and utilize all the pulp in making paper at that point.

One of Oldest in the South

The Halifax Paper Company mill is one of the oldest in the South, having been in operation for more than thirty years. The Albemarle Paper Company has been very successful in the manufacture of pulp and paper for many years and is considered one of the constructive forces of the pulp and paper industry in the South. It recently participated in the organization of a new company known as the Chesapeake-Camp Corporation, which is now building at Franklin, Va., a $3,500,000 pulpboard mill of 200 tons daily capacity.

Unusually Favorable Location

In commenting on the decision of the Albemarle company to purchase the Roanoke Rapids mill, Mr. Ellerson stated that the company had been influenced by the unusually favorable location of Roanoke Rapids for the manufacture and distribution of paper. There is an abundance of pulpwood in the territory surrounding Roanoke Rapids, ample water suitable for pulp making is available and transportation facilities by rail and highway are favorable for the assembly of wood, chemicals and other materials, as well as for the distribution of the finished product to markets.

Officials of the Albemarle Paper Company were high in their praise of D. T. Daily, industrial agent for the Seaboard, who assisted in investigating the local factors, as well as in negotiations for the acquisition of the Roanoke Rapids mill.

New Grays Harbor Unit Completed

The large new unit of the Grays Harbor Pulp and Paper Company, in Hoquiam, Wash., is completed. Company officials declare the new unit has been tested and is ready for commercial production.

Operation of the new unit increases production of the pulp mill to 250 tons a day, the former capacity being 200 tons. The plant was designed for expansion to embody six digesters. Three were included first, a fourth was added in 1934 and the new unit embodies the fifth, leaving one more unit to be developed. The plant oirginally had a capacity of 150 tons daily.

Built at an estimated cost of $150,000, the new unit also embodies other features including filtration.

In connection with this development program, Aberdeen obtained its first customer for the long idle Wynooche industrial water system. A 54-inch pipeline was built this winter to supply the plant with 30,000,000 or more gallons of water daily and this line is now delivering water to the Hoquiam industrial plant.

While the Lake Aberdeen bypass is under construction water for the pulp and paper company will be supplied from two sources and when this bypass is completed Wynooche river water flowing through the industrial water tunnel will be piped directly to the mill and supply its full needs.

At this time, pending completion of the Lake Aberdeen project, the level of water at Lake Aberdeen must be kept below normal. For this reason, part of the initial supply will be taken from the lake and part from the present privately owned line tapping the East Hoquiam.

Nineteen Canadian News Mills Advance Prices

Quotations for First Six Months of 1938 Will Not Be Less Than $50 Per Ton Delivered New York, Chicago Or Other Atlantic and Gulf Coast Ports —Producers Advance Materially Prices Quoted In Overseas Market

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 5, 1937.—To date a total of nineteen Canadian newpsrint producers, representing a rated capacity of 3,650,000 tons of newsprint, or 97 per cent of the aggregate commercially practicable capacity of Canadian mills, have announced that their contract price for the first six months of 1938 will be not less than $50 per ton f.o.b. New York, Chicago, or Atlantic and Gulf ports.

Prices in Over Seas Markets Advancing

Prices quoted in overseas markets are also being advanced materially. Canadian producers have recently been declining further orders in Argentina and Brazil at the recent price of £10.10, or approximately $52.50 per metric ton, c.i.f. Scandinavian mills have been booking tonnage at the equivalent of $57.50 per metric ton c.i.f. Buenos Aires and $58.75 a ton c.i.f. Rio de Janeiro, these prices representing an advance of $20 to $22 a ton over prices accepted 9 months ago.

In Australia contract sales for 1937 and 1938 deliveries were made last year by Canadian and English mills at the equivalent of $52.50 per long ton. A recent sale by a Canadian mill, for 1937 delivery, was made at $57.50. No prices have been announced for further 1938 deliveries but one Canadian company is reported to have quoted $62.50 in response to a recent enquiry. This is an increase of $15.00 over the 1936 contract price.

$75.00 Per Ton in China

Scandinavian and German tonnage has recently been sold in China as high as $75.00 per long ton and some small Canadian sales have been made at over $70.00. In Japan the most recent sales reported by Canadian producers are $62.00 to $65.00 per long ton for 1937 delivery and considerable tonnage has been sold at this level. No 1938 prices have been quoted. There is apparently an acute shortage of supply throughout the Oriental market.

English mills last July fixed their London contract price for both 1937 and 1938 at £10.00 ($50.00) per long ton but there have been recent reports that sharp increases in pulp prices will necessitate a newsprint price of at least £12.00 ($60.00) for 1938 and that some revision of English newsprint contracts consequently may be arranged. Current quotations for 1937 spot tonnage in London are reported to be £12.0.0 to £15.0.0.

Scandinavian producers have recently been obtaining £11.10.0 ($57.50) for 1937 deliveries in England and have not yet quoted for 1938.

Questions Wisdom of Early Announcement

The *Quebec Chronicle-Telegraph* questions the wisdom of the International Paper Company's policy in making known a decision to advance the price to at least $50 per ton nine months prior to the end of the year, and suggests that the announcement was premature.

It quotes a local business man as saying that it is hard to see how so long a warning can operate otherwise than to the disadvantage of the producers.

"'A morning paper in Montreal', the local business man is quoted as saying, 'is already forecasting the application by the provincial government of a law passed in 1926, as soon as the newsprint price goes up, to impose a tax of 10 cents a cord on all pulpwood cut, for educational purposes. By this means, it is hoped, the problem of the University of Montreal in particular, will be solved.

"'In other words, the Government is not losing any time in staking a claim to its percentage of the extra $7.50 per ton announced for 1938, and it is safe to say that the workers in the industry will be looking for their share also, as well as municipal councils, and so forth.

"'Coming to the effect upon newsprint customers, while there does not seem to be any likelihood of new contracts being signed at this time for orders to be executed next year, at least a lengthy grace has been given to look for and negotiate with alternative sources of supply, with a view to evading the price increase when it goes into effect.'"

The *Chronicle-Telegraph* adds: "There is thought to be a possibility, of course, that this announcement may be intended as a means of 'breaking the news gently', as it were, and that the price will actually be increased before 1938. However, our informant is of opinion that the companies should get together and consider their course most thoroughly; otherwise complications will almost certainly ensue. And in the meantime, the question calls for an answer: 'Why has the price increase been announced by International nine months in advance?'"

Commenting on these views the *Financial Times* of Montreal says: "It is suggested to us that International's unusually early announcement of its price policy for the first half of next year finds its justification in the peculiar situation that has prevailed in the newsprint marketing field. As regards the argument that the nine months grace given to consumers by the announcement will enable them to negotiate alternative sources of supply, it is pointed out that world conditions of supply and demand are such that there is very little likelihood of publishers avoiding the price increase except in the event of a rapid and unforeseen reversal in business conditions. The situation in the overseas market outlined above would indicate that Scandinavian mills would not disturb the price structure, even if they were in a position to do so."

An Amazing Comeback

Stories are common here of clean-ups made in the stock market by speculators who had the courage, or the foresight, to gamble on newsprint shares when these were selling for a song. Many have made money on the common shares of Price Brothers and Co., which could be picked up for next to nothing a few years ago, and which has so improved that recently a syndicate was willing to pay $40 a share for a very large block. It is related also that back a few months ago a group figured out that much more favorable conditions were bound to prevail and bought into Fraser common at $12 a share to the extent of a couple of million dollars. Naturally the advantage in Fraser to cross the $40 mark in a period of six months lent increased courage to the crowd that were negotiating for the very big block of Price Bros. common.

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The number of Stowe-Woodward Rubber Covered Rolls now operating in nearly every paper mill in the country is the finest compliment that could be paid to our ability as roll manufacturers. This recognition is the result of over three generations of highly specialized concentration in the manufacture of rubber covered rolls for the paper industry.

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Makers of WHITE STAR *Rubber Covered Rolls,* TANNITE *Couch Rolls* STONITE *Top Press and Smoothing Rolls—All by the* COREWELD *Process*

Kimberly-Clark Corp. Announces Wage Raise

Ten Cents Per Hour Increase, Effective April 4, Follows Conference of Management and Employees At Neenah — Operators In Company's Mills Are On Six Hour Per Day Schedule—Pay Rolls Increasing In Wisconsin.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 5, 1937—A wage increase of ten cents per hour for employees of the Kimberly-Clark Corporation effective April 4 was announced last week by S. F. Shattuck, vice-president. The decision was reached following a conference of employees and management at the company's main offices at Neenah, Wis. Operators in the company's mills at Neenah, Kimberly and Niagara, Wis., and Niagara Falls, N. Y., are on a 6-hour per day schedule basis.

Paper and pulp mill employment and pay rolls are constantly on the increase in Wisconsin, according to reports of the United States Bureau of Labor Statistics. For every 1,000 persons employed in the average years of 1923-1925, there were 1,115 employed in February of this year. For $1,000 of wages paid in the same average years, the mills are now paying $1,112. In the state as a whole approximately 215,000 workers were returned to employment in February, and weekly payrolls were nearly $12,500,000 greater in February than in the preceding month. The paper industry reflected this general increase, the reports said.

Consolidated Awarded Refunds

Refunds of $4,096.77 to the Consolidated Water Power and Paper Company on shipments of pulpwood from Ontario, Canada, to Appleton, Wis., have been ordered paid by three railroads in an order issued by the Interstate Commerce Commission. The railroads are the Algoma Central and Hudson Bay, the Canadian Pacific, and the Soo Line. On 211 shipments between September 3, 1931, and October 9, 1931, charges were collected originally at a rate of 19.5 cents per hundred pounds, minimum 60,000 pounds, but on November 14, 1933, the complainant paid under protest additional charges on these shipments of $4,096.77, based on the assailed rate of 22 cents. Defendant railroads were also ordered to waive collection on undercharges of pulpwood shipments described in the report.

Severson Labor Disputes Bill

After a 12-hour continuous session and 101 roll calls, the Wisconsin Senate passed by a vote of 30 to 3 the Severson labor disputes bill, and it appears certain to become a law without amendments advocated by the paper industry and other industrial interests of the state. Certain passage is conceded in the Assembly, where the bill will be up for consideration Thursday of this week. A companion measure introduced by Assemblyman Sigman in the lower house already has passed that body in its original form. Since this is an administration bill, there is little doubt that it will be approved by Gov. Philip La Follette after passage by the Assembly.

The main provisions of the bill are:

Appointment by the Governor, with confirmation by the senate, of a three-man state labor relations board empowered to investigate disputes over collective bargaining and issue mandatory orders to the parties involved.

Establishment of two statewide committees, one representing labor groups, the other employers, to receive complaints and have 30 days thereafter to handle them in their own way before the labor board takes a hand.

Registration of labor organizations with the board, which may sanction company unions only if they can convince it they are not dominated by employers.

Assurance to workers, except those in agricultural fields and domestic service, of the right of self-organization and collective bargaining.

Provision for majority rule if more than one organization in a plant seeks to represent the workers.

Prohibition of a list of unfair practices on the part of employers, principally coercion, blacklisting and refusal to abide by collective bargaining agreements.

Appropriation of $50,000 annually to the board, including a salary of $5,000 for each of the three members.

Amendments to forbid sit-down strikes were voted down five times.

News of the Industry

Sales of commercial power to paper mills of the Fox River Valley helped the Wisconsin Michigan Power Company, Appleton, Wis., to show a gain of 5.6 per cent in its 1936 volume, as compared to the year 1935. During low water stages last summer, mills were unable to use waterpower, or had the power supply so curtailed it was necessary to make up the deficiency through the public utility. Reductions in rates saved consumers approximately $84,000.

Foreclosure proceedings have been started on the Outagamie mill of the Patten Paper Company, Ltd., at Kaukauna, Wis., by the First Trust Company of Appleton, Wis., according to a report made to the Outagamie County board of supervisors at its session at Appleton last week. The county has approximately $75,000 in delinquent taxes due, and expects to obtain the amount if a sale is conducted. The mill has been abandoned.

Seventy employees of paper mills at Stevens Point, Wis., were shown a talking motion picture last week on the making of paper machine felts. The film was presented by Byron A. Yule, a representative of F. C. Huyck & Sons of Kenwood Mills, Albany, N. Y. Mills represented were Consolidated Water Power and Paper Company, Whiting-Plover Paper Company, Wisconsin River Paper and Pulp Company, and Stevens Point Pulp and Paper Company.

"Theory and Operation of Electric Motors" was the subject of an address given at the monthly meeting of the Wisconsin Valley Engineers Club at Wausau, Wis., last week by W. I. Appleman, of the Marathon Electric and Manufacturing Company. G. H. Suhs, of the Ward Paper Company, Merrill, Wis., was one of the leaders of the discussion which followed.

Walter Zahn, purchasing agent of the Marathon Paper Mills Company, Rothschild, Wis., described paper making in an address at the Lions Club meeting at Wausau, Wis., last week. He explained the transition by which clay and dyes formerly purchased in Europe are now made in the eastern states. The coal consumption of the Marathon mills, he said, is 40,000 tons a year. A history was given of paper making and the progress made over a long period of years.

Ontario Pulp & Paper Mill Pay Rolls Increase

Number of Workers Employed In Mills During 1936 Increased 7.8 Per Cent Over 1935; While Wages Were 17 Per Cent Higher — Total Awards Made By Workmen's Compensation Board Lower Than In Preceding Year.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 5, 1937—Walter S. Barber, of Toronto, secretary-treasurer of Provincial Paper, Ltd., was re-elected President of the Ontario Pulp and Paper Makers Safety Association at the annual meeting which was held at the King Edward Hotel, Toronto, on March 31. D. B. Chant was reelected secretary-engineer. Encouraging reports were presented. It was reported that the pay rolls of Ontario pulp and paper mills during 1936 increased more than $2,225,000 compared with 1935. Mr. Barber said that the payroll increase was approximately 17 per cent while the number of people employed in the mills, exclusive of the woods, during 1936 was 7.8 per cent above the 1935 average. The total time worked exceeded that for any year since 1929 and was 46 per cent higher than in 1932 which was the leanest year. Mr. Barber viewed this as substantial evidence that the pulp and paper industry in Ontario was rapidly emerging from the period of depression. The total awards made during 1936 by the Workmen's Compensation Board on account of accidents in mill operations came to $181,691 as against $186,558 in 1935. Taking changes in pay roll into account these figures showed a reduction of 16.8 per cent in cost per unit of pay roll or putting it in another way, if the same unit cost as in 1935 had been experienced for 1936, an additional expenditure of $36,778 would have been necessary.

Hinde & Dauch Report

In a letter to the shareholders accompanying dividend checks, L. F. Winchell, vice president and general manager of the Hinde & Dauch Paper Company of Canada, Toronto, says that the present year has started off auspiciously with his firm as well as for others in the industries of which his firm is a part. Continuing, Mr. Winchell remarks "No one doubts that demand for paper boards and boxes in 1937 will exceed the demand of any other year in the history of these industries. The current demand for the first quarter has really exceeded the supply. While undoubtedly this has been due to some extent to the general knowledge that all raw materials costs have been advancing for some time there seems to be no let up ahead and consequently the prices on paper boards and boxes would follow, still it does not appear that commitments are fairly comparable to the increase in demand already enjoyed. Improvements to paper mill facilities, heretofore authorized, have been unavoidably delayed because of slow deliveries although it is now expected that we will be able to complete the various installations within a reasonable time."

Abitibi Earnings Higher

G. T. Clarkson, Toronto, receiver and manager of the Abitibi Power and Paper Company, Ltd., in his annual report, says that excess of income over expenditure in the year 1936 prior to charges for depreciation and bond interest amounted to $2,240,474 as compared with $1,105,185 in 1935. Items not included in these figures include $53,184 paid for engineering reports in connection with reorganization plans and $2,101 expenses of liquidator, leaving balance available for depreciation and interest of $2,185,188. "Certain tentative plans of reorganization have been drawn up for discussion and confirmation when the time becomes appropriate to do so," says Mr. Clarkson. "Under the circumstances expectation is that it will be possible in the near future to put forward a plan for the reorganization of the company's affairs.

Before reorganization could take place, Mr. Clarkson added that it was necessary to rearrange with the province of Ontario certain timber concessions and power rights of the company and also to adjust certain claims of the Hydro Electric Power Commission of Ontario against the Abitibi Company and its subsidiary the Abitibi Electric Power Development Company, Ltd. In addition, it was deemed necessary to obtain engineering reports relative to the company's properties and information as to what amount of new moneys must be obtained to provide the company with funds to make such improvement and to give it adequate working capital; also to obtain the terms and conditions upon which such moneys could be secured. Reports mentioned have been largely completed and substantial progress has been made in negotiations with the province of Ontario on the matters referred to.

Mr. Clarkson reports an improvement during the year of $244,010 in current assets and reduction in current liabilities of $234,440, making the total improvement in net working capital $478,450 to a total of $2,241,301 against $1,762,857 the year before. Such improvement was after paying $2,000,000 cash in settlement of the indebtedness owing by the Abitibi Co. in respect to the purchase of the shares of the Thunder Bay Paper Co., Ltd. By court approval the original liability of $2,727,916 was reduced to $2,000,000 plus $40,918 interest.

News of the Industry

Collingwood and Owen, Sound interests have organized the International Transportation Company, and will begin operations with the opening of navigation. Captain George Hindman, of Owen Sound, is vice president and managing director of the company. The chief article of commerce that the company will be engaged in transporting will be pulpwood from the north shore of Lake Superior and Manitoulin Island to various paper companies at American lake ports. Other articles carried will be iron ore, coal and pig iron on the up-trips. A large fleet of steamers, barges and tugs all of which will be plying the waters of Lakes Erie, Michigan, Superior, and Georgian Bay have been chartered. At the present time contracts for the transportation of some 200,000 cords of pulpwood have been issued.

Incorporation has been granted to the Lake Sulphite Pulp Company, Ltd., with head office in Toronto and an authorized capital of $300,000, of no par value shares. Aggregate consideration for the issue of the shares is not to exceed $900,000 or an average of $3.00 per share. The shares, however, are likely to be offered at a considerably higher price and the extra funds may be taken into account as capital surplus. The formation of the company is one of the initial steps in financing construction of a sulphite pulp mill at Nipigon, Ont., to cost $6,000,000. Part of the amount will probably be raised by sale of bonds and part by the issue of shares. The initial capacity of the mill will be 200 tons daily.

Paper Demand Continues Excellent In Chicago

Upswing In Request for Various Standard Grades of Paper Resumes After Easter — Fine Paper Market Exhibits Stronger Undertone — Higher Newsprint Paper Prices Results In An Upward Trend of Ground Wood Papers.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 5, 1937—No visible upper limit on prices is as yet evidenced in the Chicago paper market. During the past week current reports of strength in pulp markets were translated into an expectancy for even higher prices in many grades. The sulphite group, particularly the bleached division, believes that higher quotations are in the offing. In all grades mills are reporting at an average of nearly ninety per cent capacity. Demand continues to be excellent, particularly since Easter when the upward swing was resumed.

Fine papers were in excellent demand with the undertone decidedly strong. Books and covers made a good record during the week with the latter, in particular, evidencing noteworthy strength. Higher prices in the newsprint industry were having a local effect and extending into the already well defined upward trend of the ground wood market. Indications that paper boxes would go higher provided proof of improved figures in this particular division. Blotting papers lagged somewhat during the week. Specialties, for the most part, were reported as "satisfactory". Waste papers were in only fair demand with certain of the finer grades said to be giving the best account of themselves.

Association Activities

The Salesmen's Association of the Paper Industry, Mid West Division, held its regular meeting on Monday, March 29, with a round table discussion of business conditions again featuring the session. A feature of the meeting was a resumption of the discussion by Chairman Diggs of the Education Committee with respect to selling methods in a sellers market where available tonnage is a scarce quantity and prices are rapidly advancing. The association, because of its broad and comprehensive program, is also attracting a number of new members. The salesmen present stated that the markets were universally strong, though blotting papers were indicated as one of the laggards in the upward movement.

The impetus given the importance of credit work in the paper industry, recently provided by the Chicago Association of Credit Men at its latest forum program, has spread throughout the fine paper industry. The credit men in the industry are to take a comprehensive part in the Seventh Credit Congress of Industry to be held at the Stevens Hotel, Chicago, June 21 to 25. The credit men will participate in a series of credit discussions with the group headed by G. C. Marguerat of the Butler organization in Detroit. Samuel Wolfson, of Berkshire Papers, Inc., Chicago, is a co-vice-chairman of the group which is urging credit men within the fine paper industry to participate in the meeting which will also feature a discussion of the Robinson-Patman Act and the provisions of the Social Security Act.

Important meetings of two major divisions of the paper industry are to be held in Chicago this week. The Sulphite Bond group of the Writing Paper Manufacturers Association is to meet in the French Room at the Drake Hotel on the afternoon of April 6 with Emmett Naylor in charge. The Kraft Paper Association will hold a morning and afternoon session at the Drake Hotel on April 9 with S. M. Hudson in charge. Both meetings are expected to attract a gratifying attendance in view of the importance of the market position of these two major lines.

Use of Coal by Paper Mills

Illinois coal operators are in the midst of a serious study as to whether or not the use of coal by paper mills is really on the decline. Recently *Power Plant Engineering* put more emphasis on the question and seemed to indicate that drastic changes may be expected in the paper industry which will have a far-reaching effect on machinery, fuel and public utility fields.

Paper mills without coal and power bills but with an excess of fuel and power to sell along with the paper or pulp output is the prospective bug-a-boo described by local interests. The pulp process involves the separation of wood fibers by chemically removing the resinous substances which cements them together. This resinous material has a heat value and efforts to recover this heat in the material are being made. More recently, according to the publication, a new process involving recovery in pulverized form has been developed by one of the best known engineers in the paper industry. The by-product fuel recovery runs well above the mill heat requirements. Commercial success and widespread application is said to mean cheaper paper but also means the replacement of millions of dollars worth of equipment, loss of market for millions of tons of coal. Even the public utilities are said to be affected not only because the output of hydro plants now operated by paper companies will no longer be needed by them, but because all mills, including those now buying power will be in a position to sell power produced as a by-product. If this is practical, then they can sell an equivalent amount of pulverized fuel.

The queries often expressed by observant coal companies eagerly seeking to expand every available market have thus been crystallized by *Power Plant Engineering* and paper manufacturers, coal producers and machinery manufacturers and suppliers are all busily engaged in giving the matter a lot of real thought.

News of the Industry

The Link-Belt Company has made an outstanding contribution to the business thought of the country through the report of Albert Kaufman to the stockholders of the Link-Belt Company. The report was read at the annual meeting of March 23 and calls particular attention to the tax problem—local, state, national, and the Social Security Act. Mr. Kaufman's report detailed the new taxes with which Link-Belt is confronted and the new reports now required by law. The entire report will be of universal interest to the paper trade and is contained in full in the April, 1937, issue of *Link-Belt News*, the house organ of the Chicago company.

T. D. Evans is in charge of one of the newer sales offices in Chicago, that of the W. C. Hamilton & Sons organization which has recently opened offices at 176 West Adams Street in Chicago's loop. The organization, makers of prehumidified papers, decided on the Chicago location because of rapidly expanding business in the mid-western area.

Boston Paper Business Generally Well Sustained

Manufacturers Having Difficulty In Filling Orders From Paper Merchants —Fine Paper Market Fairly Active—Kraft Paper Request Continues Good for Season — Box Board Reported to Be Moving Freely Into Consumption.

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 5, 1937—The wholesale paper business was well sustained last week, with houses having some difficulty in obtaining supplies from mills, which are "terrifically busy," trying to fill orders from jobbers. The volume of orders for fine paper averaged at least fair, although in some quarters business was spotty, and in others the demand had fallen off a little. Kraft was active. At one wrapping paper house it was stated that business was "pretty good, no complaint whatsoever." In many cases, if not all, jobbers have been obliged to operate with the mills on an allotment basis. With prices of paper advancing, the general situation is somewhat confusing. Paper bag business was favorable. Demand for box board continued good. Prices of a number of grades have advanced.

Many grades of paper stock continued active. In old papers, the market was active and strong in some quarters, although in others it was stated that consumers had reduced prices. Solid ledger books were reported to have sold at 3.00, f.o.b., Boston, although they continue to be quoted lower.

Manila envelope cuttings were reported to have moved at 2.50 f.o.b., Boston, although they are still quoted lower. Mixed papers, however, advanced to .60 @ .65 from .55 @ .60, old newspapers to .65 @ .70 from .60 @ .62½, No. 1 old manila to .95 @ 1.00 from .80 @ .85, corrugated boxes to .95 @ 1.05 from .90 @ 1.00 and kraft corrugated boxes to 1.80 @ 1.85 from 1.50 @ 1.60, all f.o.b., Boston.

In bagging, foreign manila rope was very strong. A sizable sale of foreign manila rope was made at 5.00 c.i.f. dock. Bagging quotations continued unchanged, although there was a disposition on the part of consumers to reduce prices on Australian wool pouches.

New domestic rags were rather active, with prices tending to advance, although there was some resistance on the part of manufacturers. Quotations of old domestic rags continued unchanged. Roofing stock was quiet. Foreign rags were a little easier, with a tendency for prices to decline. Old linsey garments went down to 2.50 @ 2.65 from 2.65 @ 2.90.

Curtis Invited to Massachusetts

In a letter to the Curtis Publishing Company inviting the company to establish its headquarters and plant in Massachusetts, M. D. Liming, secretary of the Boston Chamber of Commerce, called the attention of Walter D. Fuller, president of the company, to the fact that paper mills in this State and elsewhere in New England assure a steady source of supply for high grade raw materials, and that there are available exceptional transportation facilities by rail, motor and water. The Curtis Publishing Company recently announced that they are considering leaving Philadelphia because of heavy taxes.

News of the Industry

A luncheon meeting of wrapping paper merchants was held Friday at the Boston Chamber of Commerce under the auspices of the Cost Finding Committee.

The board of directors of the New England Paper Merchants Association met Friday afternoon for current business at the office of the Association.

John C. Hurd, executive secretary of the New England Paper Merchants Association, visited the trade in the Rhode Island territory Thursday and had a conference with John R. Halkyard, of the Providence Paper Company, Providence, R. I., who is vice-president of the Association.

At a meeting of the executive committee of the Boston Paper Trade Association, it was voted to hold the annual outing of the organization Monday, June 7, at the Charles River Country Club. William J. McLellan, of Carter, Rice & Co., Corp., is chairman of the golf committee, and Gardner W. Very, of Hollingsworth & Whitney Company, chairman of the sports committee.

The first of a series of four meetings conducted by Frank C. Herrick, of the Columbian Rope Company, took place at the sales office of Carter, Rice & Co., Corp., Friday evening at 6 o'clock. Mr. Herrick's discussion, which lasted about an hour and a half, was followed by a 30-minute question period. Streeter Bush presided. The future meetings will be held on alternate Fridays, when various types of wrapping twine will be discussed more thoroughly.

Sears L. Hallett, sales manager of the Corroflex Division of the Sherman Paper Products Corporation, Newton, Mass., is to discuss the merits and usability of Corroflex with the sales department of Carter, Rice & Co., Corp., Saturday morning, April 24.

William M. Kennedy, who has been salesman for Knight, Allen & Clark, Inc., for about ten years, was given a party by the company Wednesday evening on the occasion of his birthday and presented with a handsome travelling bag. About twenty were in the party. Mr. Kennedy is leaving the company shortly for Virginia, where he will be with his son.

Henry L. Goodman is distributing for the Royal Paper Corporation, New York, sample books containing swatches of new papers made by that concern. In one swatch of Lattice Pattern Chrome Base, colors are stepped in blue, rose, green, gray, India and white. The other swatch, Lattice Pattern Suede Base, contains dark green, red, black and dark blue (linen embossed). These papers are sold in 26 inch rolls—2 reams each or in sheets cutting from these rolls.

Nathan S. Clark, president of Knight, Allen & Clark, Inc., has returned from a delightful pleasure trip to Norfolk, Va.

M. L. Simpson, secretary for Knight, Allen & Clark, Inc., has gone to Washington, D. C., for about ten days.

Floyd H. Blackman, secretary of D. F. Munroe Company, has returned from a trip, both on business and pleasure, to New York, Washington and Richmond, Va., accompanied by his two sons, George and Arthur.

Henry L. Goodman and his associate, Robert A. Ford, called at the mills in Holyoke, Mass., yesterday.

W. T. Libby, of the New York office of the Claremont Paper Company, Inc., Claremont, N. H., called on the trade last week.

H. B. Wilder, of True & McClelland, paper stock dealers, has returned from a business trip to New York and Philadelphia.

Paper Stock Displays Strength in Philadelphia

Consumption of Waste Paper by Paper Mills Expands Materially — Many Grades of Paper Stock Reach New Levels for the Year — Hard and Soft White Shavings, Ledger Stock, Kraft Papers and Mixed Papers Advance.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 5, 1937 — The extremely strong tone which has been exhibited in the waste paper market here still continues. No. 1 hard white and No. 2 soft white shavings, together with white and colored ledger stock, print manila, kraft paper, No. 1 mixed paper, corrugated board and old newspapers have reached a new high for the year. Reports indicate that production and consumption of waste paper have reached the highest level in recent years. One of Philadelphia's leading merchants in the waste paper industry stated to your correspondent that he could name six mills who, if they knew he had one ton of waste paper on his premises, would have their six trucks back up to his plant and fight to a finish to get that one ton.

Association Activities

The Philadelphia Paper and Cordage Association held its second annual shad dinner at the Meridian Club on Friday evening last. Upwards of eighty members and their guests participated. E. K. Lay, president of the association, was toastmaster. The Rev. Dr. Croswell McBee, chaplain of the association, spoke on the benefits of the organization and dwelt at length on its accomplishments. Immediate Past President George K. Hooper spoke in glowing terms of the pleasure he derived from his contacts with the association and thanked the members for the whole-hearted support manifested by their cooperation, and urged a continuance of their loyalty and support. Among the out-of-town guests were Frank T. Roach, assistant sales manager of the Lily-Tulip Corporation, New York; R. LeRoy Kithin, of Van Reed Paper Company, Reading, Pa., and George Washington Downs.

Leonard Fitzgerald, of Hummel-Ross Fibre Corporation, gave a reading entitled "Carry On," by Robert Lewis Service, which was very well received. J. R. Howarth, of the J. R. Howarth Paper Company, presented a suggestion for a fishing outing this summer on the Chesapeake, and Mr. Howarth, assisted by Otto Renner, have set to work out a schedule for this outing which will be announced shortly.

E. L. Richards, of the Buffalo Envelope Company, and chairman of the Golf Committee, announced that the first golf tournament of the year will be held on April 23 at the Bala Golf Club. All the members of the association are invited to participate; the greens fee will be $1.50; caddy fee 75 cents; luncheon 50 cents; dinner $1.00. All those desiring to attend were urged to make reservations early through Mr. Richards at the Buffalo Envelope Company, 401 North Broad street. Handsome prizes will be awarded for low gross, low net and kickers handicap.

James M. O'Neill, of P. J. O'Neill & Sons, and president of the Philadelphia Waste Merchants Association, announces that the quarterly meeting of the association will be held tomorrow evening at Broadwood Hotel, at which time George H. French, of Castle & Overton, New York, chairman of the Banquet Committee will make his report on the banquet which was held at Adelphia Hotel Roof, March 9th, with an attendance of 280 members and their guests.

J. B. Baty With Pennsalt

The Pennsylvania Salt Manufacturing Company announces the appointment of J. Bernard Baty, well known sanitary engineer and chemist, as technician and consumer consultant in the Technical Service Department. Mr. Baty left the post of assistant sanitary engineer of the New Jersey Department of Health to accept his present appointment. He is a native of Texas, took his degree in Civil Engineering from Texas A. & M. in 1925, and received his basic education and field training in that state, working for two years with the Texas Department of Health. He followed with liaison work between that unit and the U. S. Public Health Service. He later entered the graduate school of engineering at Cornell University and has qualified for Master in Civil Engineering, which degree he expects to receive in June, 1937.

Mr. Baty's wide experience in the public health engineering field will make available to Pennsalt clients a broad practical knowledge in the solution of their diverse problems. His more than seven years' experience with the New Jersey Department of Health have given him a detailed knowledge of the various applications of chlorine to sewage treatment in congested New Jersey where sewage chlorination has developed to great utility. He succeeds J. M. Potter, resigned, and will be assigned to the headquarters of the company at Philadelphia.

Paper Stock Damaged by Fire

Between $8,000 and $10,000 damage resulted from a fire that broke out in the waste paper warehouse of the Penn Fibre Board Company, Mt. Rose section of Spring Garden township on Thursday of last week. The blaze which stated at 11 o'clock in the morning, resulting from spontaneous combustion, was fought by the township's three fire companies for more than an hour.

From 800 to 1,000 tons of waste paper were stored in the warehouse. The stock was damaged by flames and water, while the damage to the building was only slight.

Union Considers Profit-Sharing Plan

Establishment of a profit-sharing fund for the officers and executive employees of the Union Bag and Paper Corporation is to be considered at the annual shareholders' meeting to be held in Jersey City on April 13. As approved by the directors the plan provides that if net profits for any year exceed $1,000,000 a sum equivalent to 13½ per cent of the second $1,000,000 and 4½ per cent of earnings in excess of $2,000,000 are to be set aside for the fund.

G. G. Tayloe to Visit Europe

George G. Tayloe, president of the Tayloe Paper Company, Memphis, and his wife plan a six to eight weeks trip to Europe this Spring and Summer. They will leave in May on the *Rex* and sail to Nice, France. After a short stay there, they have engaged an automobile to follow a picturesque and scenic route through Switzerland, Austria, Germany, and France.

Hold down FELT costs with TENSILASTIC Suction Press Rolls

Regardless of great increases in production, the profit you make depends on costs—steam, felt, wire, rubber rolls. If *felt* costs mean anything to you, you can reduce them with Tensilastic Suction Press Rolls. That is no mere boast. It's a fact that has been proven in mills where Tensilastics are used.

Reports show almost unbelievable jumps in felt life after Tensilastics are installed. That applies not only to Suction Press Rolls but to regular Tensilastic rubber covered Press Rolls also. The reason?

Tensilastics are more lively. They have correct Modulus—the quick elastic rebound that snaps back to normal after pressure. The crown is maintained for a much longer period keeping the rubber cover in the best possible working condition. Being uniformly round and resilient, they are easier on felts. They do not crush nor cut at the nip. These are the real and important reasons why Tensilastics do actually improve felt life. And with Tensilastic Suction Press Rolls, the holes are wide open ready to drain off a maximum of water as they approach the nip.

Don't take our word for it, nor that of paper mill superintendents who are using Tensilastic rubber rolls. Put a Tensilastic in your machine and keep a record of its performance and its effect on felt life. That is the only way you will know what Tensilastics can do for you. Use them. Make them prove themselves in your machines. You'll be glad you did.

AMERICAN WRINGER COMPANY, Inc.

Rubber Roll Specialists for nearly 50 Years

WOONSOCKET, R. I.
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The Williams-Gray Co.
221 No. LaSalle St., Chicago, Ill.

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TENSILASTIC
RUBBER ROLLS

T-99

REG. U. S. PATENT OFFICE

Obituary

George F. Steele

George F. Steele, a prominent figure for many years in the newsprint industry in this country and Canada, died March 31, in his residence, 1,155 Park Avenue, New York, after a long illness.

Mr. Steele was born in Watertown, Mass., October 12, 1858. His father, the Rev. George M. Steele, was at that time a Methodist Minister, and later entered the educational field and for thirty years was connected with colleges and schools at Appleton, Wis., and Wilbraham and Auburndale, Mass. He was a deep student of economic problems and the author of several works on political economy and moral science. His mother came from a hardy race of seafaring men on Cape Cod and was a woman of gerat executive ability and power.

Mr. Steele was educated in the public schools and Lawrence College, at Appleton, Wis., graduating in 1878. On August 28, 1879, he entered the employ of the Van Nortwick Paper Mill interests at Appleton, Wis., as a bookkeeper and remained with this concern in various capacities until December, 1886.

Together with the late George A. Whiting, of Menasha, Wis., and with local capitalists at Grand Rapids, Wis., the Centralia Pulp and Paper Company was formed, and he became the manager of this company.

He remained there until June 1890 when he was called back to Appleton by the Van Nortwick interests to accept the position of general manager of their business.

In December 1891, he accepted an offer from Fred W. Taylor, general manager of the Manufacturing Investment Company, with Mitscherlich sulphite mills at Appleton, Wis., and Madison, Me., to become associated with him in the management of that business.

In 1893 Mr. Steele accepted an offer made to him by William Deering, head of the Deering Harvester Company, Chicago, Ill., and entered the employ of that company, becoming a working partner in the concern shortly after going with them. He was connected with this company in various capacities, until the company was bought by the International Harvester Company in 1902.

Mr. Steele entered the employ of the International Harvester Company on its formation, and soon became general manager of manufacturing of that institution. Owing to close attention to business, his health became impaired and in April 1906 he resigned his position with the Harvester company and became vice president of the Post Edwards Fibre Company at Port Edwards, Wis.

On July 1, 1908, this company was purchased by the Nekoosa-Edwards Company, anw Mr. Steele became general manager of the latter company, which position he held until July 1912, when he assumed the active management of the Brunet Falls Company at Cornell, Wis.

A year later Mr. Steele gave up the active management of this company, intending to form a company to make kraft paper in the southern states and devoted some time to the investigation of this proposition. Before he had completed these investigations, the War came on and the plan was given up.

On April 1, 1915, Mr. Steele took the management of the Newsprint Manufacturers Association of New York, and retained this position until September 1, 1917, when he became general manager of the Canadian Export Paper Company, Ltd., of Montreal.

On leaving the management of the Canadian Export Paper Company, Ltd., of Montreal, at the expiration of his contract on September 1, 1922, Mr. Steele organized the Newsprint Paper Corporation of New York, of which he became president.

This company made exclusive contracts for representation in the United States for fourteen mills producing newsprint paper in Sweden and Norway, and covered practically all the concerns engaged in the business in those countries.

On March 1, 1924, Mr. Steele engaged in business in the City of New York in the sale of newsprint paper, and took the agency for the Powell River Company, Ltd., of Vancouver, British Columbia, for all overseas countries, and for the United States east of the Rocky Mountains.

On April 1, 1927, Mr. Steele formed a Limited Liability Company to handle the business which he had built up, and shortly after that, obtained long-term agencies for the disposal of the product of the Powell River Company, Ltd., for overseas countries and territory east of the Rocky Mountains in the United States, and of Price Bros. & Co., Ltd., and the St. Lawrence Paper Mills, Ltd., for overseas trade. Mr. Steele became president of the new company on its formation, and on January 1, 1935, resigned the presidency of his company, and became chairman of the board of directors.

Surviving are his wife, Alice F. Steele; his daughters, Mrs. Jules Gentil of Paris, the Misses Barbara and Harriet Steele of New York City, and two daughters and a son of a former marriage, the Mrs. Benjamit Conan, Jr., Mrs. J. Murray Ross, and Roderick Steele, all of Massachusetts.

Talcott Williams Powell

Talcott Williams Powell, a well known newspaper man and author who started his career with the PAPER TRADE JOURNAL, died of peritonitis at Greenwich Hospital, Greenwich, Conn., April 4. Mr. Powell, who was 36 years old, was stricken with appendicitis last Sunday.

A native of Lansdown, Pa., Mr. Powell was educated at Wesleyan University, Middletown, Conn., and began newspaper work in 1920 as a reporter for THE PAPER TRADE JOURNAL in New York. From there he went to *The Sun*, and then to the *New York Tribune* as a reporter and assistant day city editor. In 1925 he went to Middletown, N. Y., to become publisher of *The Times-Herald* for the Harriman interests.

In 1927 he returned to New York City and became a reporter for *The World Telegram*, and served as assistant executive editor of that newspaper in 1931-'32. He was editor of *The Indianapolis Times* from 1933 to 1935, after which he began writing for *Cosmopolitan Magazine*.

While working for that magazine he chartered a schooner, which he navigated, and cruised through the West Indies and along the coast of Venezuela. On that expedition he discovered and excavated the town of Caparra, which was established in Puerto Rico by Ponce de Leon in 1510 and abandoned in 1521.

In 1918, Mr. Powell served as a private in infantry and at the time of his death was a first lieutenant in the Military Intelligence Reserve, United States Army.

He married Ysabel Allen Loney, of Mountain Lakes, N. J., in 1923. They were divorced in 1928, after the birth of one son, David Tallcott. In 1928, he married Helen Ann Ranney, of New York.

Mr. Powell lived in Glen Avon Drive, Riverside, Conn. Surviving, besides his wife and son and a daughter, Edes Lawrence Powell, are his father, the Rev. Dr. Lyman Pierson Powell, rector emeritus of St. Margaret's Protestant Episcopal Church, the Bronz, and former president of Hobart College; his mother, Mrs. Gertrude Wilson Powell, and a brother, Francis W. Powell, of Brooklyn.

BRISTOL'S

PYROMASTER

Round Chart RECORDING POTENTIOMETER Direct Ink Marking

A REVOLUTIONARY ACHIEVEMENT IN POTENTIOMETER DESIGN

A newly developed Potentiometer

WITH A SIMPLIFIED OPERATING MECHANISM

No lubrication required	Unaffected by vibration
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WRITE FOR BULLETIN NO. 482J

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IN THE PULP AND PAPER INDUSTRY

TACHOMETER (Pyromaster): For recording paper machine speed on a daily round chart. A sturdy accurate recording tachometer unaffected by vibration and requiring very little maintenance.

RESISTANCE THERMOMETER (Pyromaster): For general temperature applications requiring an easy-to-file, daily, round chart record where the distance from point of measurement to the instrument makes it more desirable to use lead wires than tubing, —for example, digester temperatures. Also for plants in which all instruments are mounted on a centrally located panel; and for applications where it may become necessary to change length of lead wire or even replace the temperature-sensitive bulb.

PYROMETER (Pyromaster): For recording sulphur burner temperatures.

Offered as a PYROMETER · RESISTANCE THERMOMETER · TACHOMETER · MILLIVOLTMETER

Blue Print Paper Complaint

WASHINGTON, D. C., March 31, 1937.—Eleven companies said to control and dominate the production and distribution of blue print paper and other reproduction paper, used in the engineering and building trades, are named respondents in a complaint issued by the Federal Trade Commission against them and their trade association, the Scientific Apparatus Makers of America, 20 North Wacker Drive, Chicago, and the Surveying-Drafting-Coaters Section of that association.

The complaint charges these respondents and various officers, directors and other members with combining and conspiring to fix and maintain prices, control bidding, and other unfair practices in connection with the sale of their particular type of products, in violation of Section 5 of the Federal Trade Commission Act.

Members of the association and its Surveying-Drafting-Coaters Section named as respondents are: Charles Bruning Company, Inc., 102 Reade street, and Euguene Deitzen Company, 218 East Twenty-third street, both of New York; Keuffel & Esser Company, 300 Adams street, Hoboken, N. J.; The Huey Company, 17 South Wabash Avenue, The Frederick Post Company, 3636 North Hamlin Street, Economy Blue Print Products, Inc., 1714 North Damen avenue, The C. F. Pease Company, 813 North Franklin street, and United States Blue Print Paper Company, 207 Wabash avenue, all of Chicago; Keystone Blue Paper Company, 910 Filbert street, Charles W. Speidel & Co., 112 North Twelfth street, and J. H. Weil & Co., 1315 Cherry street, all of Philadelphia.

The Surveying-Drafting-Coaters Section, one of seven divisions of the general trade association, each division acting as a trade association to protect the interest of its own group, has approximately forty members, but this number, according to the complaint, varies from time to time because of the dropping out of old and the addition of new members so that at any one time it is impractical to name all members as parties respondent.

The complaint names the eleven members separately and as representatives of all other members as a class, such members, according to the complaint, constituting practically all the sellers to wholesalers of, dealers in and consumers of the various products sold, especially blue print and other reproduction papers and cloths.

These members and the trade association and the one section named, through their officers and directors, who are alleged to control association policies and activities, are charged with entering into a combination and agreement under which they allegedly effected the following practices:

Each member filed with the association a schedule of prices, including discounts and the terms and conditions of all sales, to be observed by members in the sale of their products.

New Combustion Catalog Out

Specifications and engineering data on the CE-Skelly Stoker Unit for small commercial and industrial installations are contained in a new catalog just issued by Combustion Engineering Company, Inc., 200 Madison Avenue, New York. These stokers are built in the stationary-grate type for coal burning capacities up to 300 lbs. per hour and in the moving-grate type for capacities up to 2,000 lbs. of coal per hour, for either anthracite or bituminous coal. The latter are built in both the center-retort and the side-retort types with cantilever dump plates, while the former is of the side-retort type. Both employ screw and ram feed.

Government Paper Awards and Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 7, 1937—The Paper Corporation of the United States has been awarded the contract for furnishing the Government Printing Office with 46,000 pounds (200,000 sheets) of 38 x 48 inch offset book paper at 5.92 cents per pound, bids for which were received on March 19.

The Printing Office has received the following bids for 36,000 pounds (105,000 sheets of 50 per cent rag white ledger paper; L. Hyman & Sons, 11.87 cents per pound; Aetna Paper Company, 16 cents; Reese & Reese, Inc., 12.48 cents; Walker Goulard Plehn Company, Inc., 16.45 cents; R. P. Andrews Paper Company, 11.95 cents; Barton, Duer & Koch Paper Company, 11.49 cents; Graham Paper Company, 11.95 cents; and J. R. Howarth Paper Company, 14.88 cents.

For 71,600 pounds (400,000 sheets) of white antique book paper; John F. Post, Inc., 5.67 cents; Cauthorne Paper Company, 5.41 cents; Reese & Reese, Inc., 5.56 cents and 5.41 cents; Whitaker Paper Company, 5.67 cents; R. P. Andrews Paper Company, 5.46; Barton, Duer & Koch Paper Company, 5.67 cents; Fitchburg Paper Company, 5.91 cents; Stanford Paper Company, 5.41 cents; and Paper Corporation of United States, 5.41.

Jessup & Moore Paper Company will furnish 71,600 pounds (400,000 sheets) of 33 x 43 inch white antique paper at 5.387 cents per pound and Barton, Duer & Koch Paper Company will furnish 36,000 pounds (105,000 sheets) of 50 per cent rag white ledger paper at 10.98 cents per pound. Bids for both of these items were received on March 26.

Reese & Reese will furnish 54,516 pounds (140,000 sheets) of 100 per cent rag white chart paper at 20.73 cents per pound, bids for which were received on March 22.

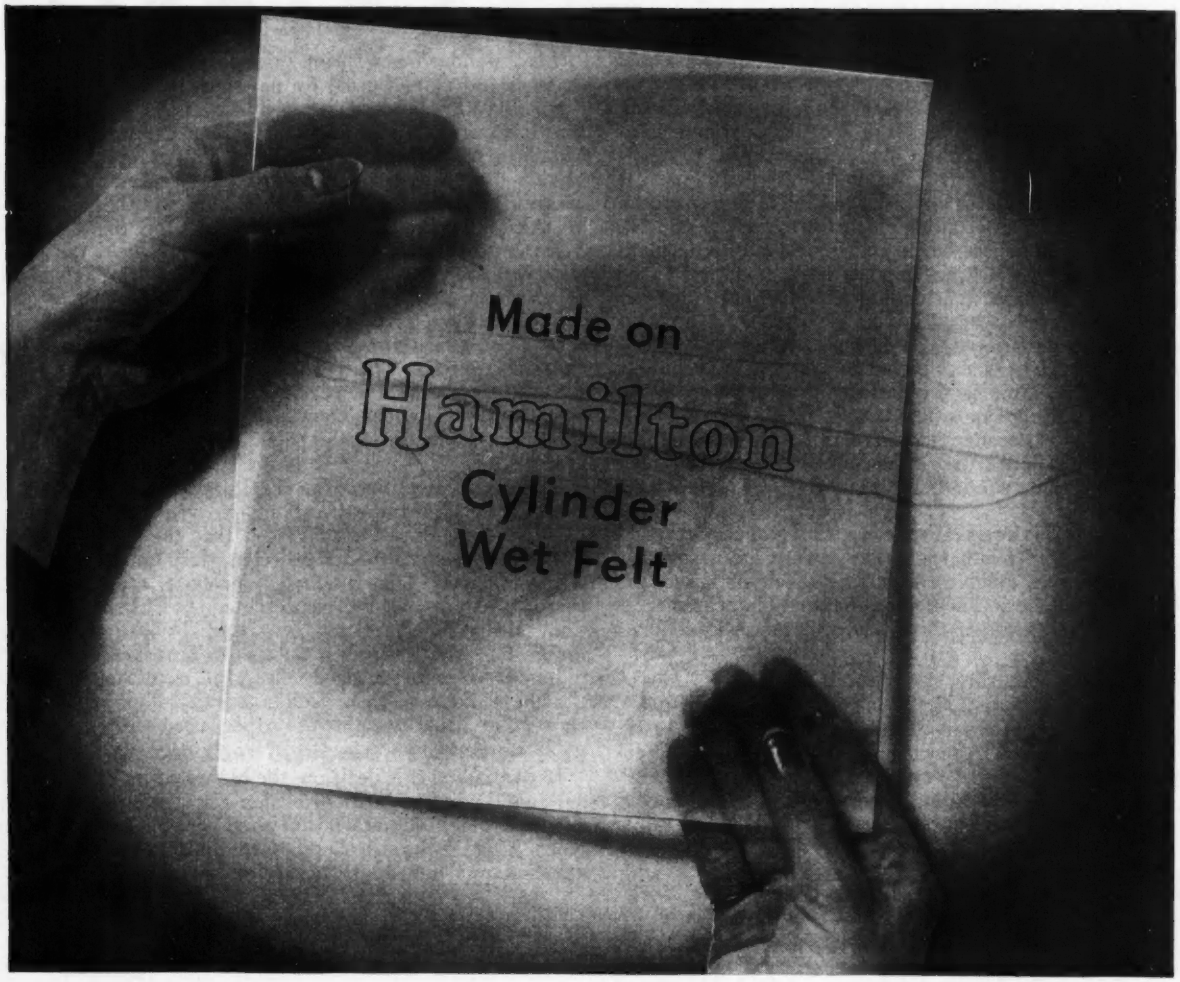
New Hurlbut Sales Agencies

Hurlbut Paper Company, of South Lee, Mass., announces the appointment of the following new agencies, for its new Mould Made Cover, Cortlea and Shadow—Mould Four Side Deckle Edge:

MOULD MADE COVER: Baltimore, Baltimore Paper Company, Inc. Boston, Carter, Rice & Co., Corp., Cook-Vivian Company, Inc., and Storrs & Bement Company. Buffalo, Paper Service, Inc. Cleveland, The Petrequin Paper Company. Detroit, Seaman-Patrick Paper Company. Hartford, The Rourke-Eno Paper Company, Inc. New Haven, The Rourke-Eno Paper Company, Inc. and Storrs & Bement Company. New York, Marquardt & Co. and Schlosser Paper Corporation. Philadelphia, Raymond & McNutt Company. Providence, Providence Paper Company. Rochester, Paper Service, Inc. Syracuse, Paper Service, Inc. Springfield, The Paper House of New England. Toledo, Ohio and Michigan Paper Company and Worcester, Chas. A. Esty Paper Company.

CORTLEA: Albany, Hudson Valley Paper Company; Baltimore, Baltimore Paper Company, Inc. Cleveland, The Petrequin Paper Company. Detroit, Momberg & Son. Hartford, The Rourke-Eno Paper Company, Inc. New Haven, The Rourke-Eno Paper Company, Inc. and Storrs & Bement Company. New York, Marquardt & Co. and Schlosser Paper Corporation. Providence, Providence Paper Company. Toledo, Ohio and Michigan Paper Company and Troy, Troy Paper Corporation.

SHADOW-MOULD FOUR-SIDE DECKLE EDGE: Detroit, Seaman-Patrick Paper Company and Seattle, Zellerbach Paper Company.



TO MAKE PAPER thin enough to be transparent but tough enough to stand the gaff of commercial use is some job. The real trouble begins when the pulp leaves the wire screen, heavy with water and soft as foam. And that is where Hamilton Felts come into the picture.

• HAMILTON CYLINDER WET FELTS remove the water rapidly, uniformly and unfailingly. The virgin wools from which they are manufactured are selected and combined with special reference to the particular papers they will be called upon to produce

Whether it be the finest tissue or the heaviest board, there is a Hamilton Felt that will do the job faster, better and at lower cost

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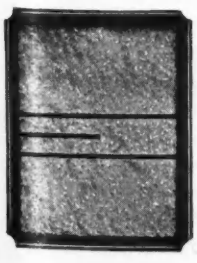
• Miami Woolen Mill, Established 1858 •



Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Hamilton Felts

Paper Superintendents' Convention

General headquarters of the American Pulp and Paper Mill Superintendents' Association Convention, which will be held at Springfield, Mass., on June 23, 24 and 25, announce that all committees are speeding arrangements along in high gear under the able leadership of W. Gordon Booth, general chairman.

A tentative schedule of the program, including principal events, speakers, entertainment features, etc., will be available about the first week in May. Ambitious plans will be carried through to contribute to the profit and pleasure of every guest attending. Convention facilities will be ideal.

All of the sessions will be held in the same building as the paper progress exhibit to be put on by suppliers of the industry. This is the Industrial Arts Building of the Eastern States Exposition Group.

Adequate hotel accommodations will be provided by five or six of Springfield's first class hotels. A splendid program of entertainment is being planned for ladies of the convention.

Leonard P. Taylor, chairman of exhibits, reports that a large amount of booth space has already been sold for the paper progress exhibit. Five days after the space was opened for sale, the following had definitely indicated their desire to exhibit, most of them having been assigned definite spaces:

The Foxboro Company, Foxboro, Mass.; A. E. Broughton & Co., Glen Falls, N. Y.; The Sinclair Company, Holyoke, Mass.; Warren Steam Pump Company, Inc., Warren, Mass.; The American Brass Company, Waterbury, Conn.; Hercules Powder Company, Inc., Kalamazoo, Mich.; E. D. Jones & Sons Company, Pittsfield, Mass.; Cheney-Bigelow Wire Works, Springfield, Mass.; Brown Instrument Company, Philadelphia, Pa.; Bird Machine Company, Walpole, Mass.; Oliver United Filters, Inc., New York; International Nickel Company, New York; The Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.; Paper and Industrial Appliances, Inc., New York; Paper Makers Importing Company, Inc., Easton, Pa.; Chapman Valve Manufacturing Company, Holyoke, Mass., and Penick & Ford Ltd., Inc., Cedar Rapids, Iowa.

E C & M Steel-Clad Motor Control

The Electric Controller and Manufacturing Company of Cleveland, Ohio, has just published an illustrated Catalog devoted to recent examples of their motor control units.

The achievements of the EC&M Company in meeting the demand for enclosed motor control equipment are widely known. The result has produced starters for single motors or for groups of motors with the necessary power panels of very compact, shock-proof design; each unit being complete with disconnect switches, bus bars, contactor-type switching mechanisms, safety door-interlocks, meters and all the equipment necessary to meet the requirements of the individual application.

Kenora Paper Mills Staff Changes

R. H. M. Robinson, president of Kenora Paper Mills, Ltd., Kenora, Ont., announced effective April 1, 1937: Dan McLeod, who has been on leave of absence, will resume his duties as resident vice-president of Kenora Paper Mills, Ltd., and affiliated companies. Ralph Bateman is appointed general manager of Kenora Paper Mills, Ltd., Keewatin Power Company, Ltd., and Kewatin Lumber Company, Ltd., in charge of the operations of the companies.

Imported Printing Paper Decision

That standard newsprint in such paper as was known as such and chiefly used by newspapers when the Tariff Act of 1930 was passed, was the decision of the United States Court of Customs and Patent Appeals rendered Monday, March 29 in the most important paper case before the Customs Courts in many years. The case involved paper imported from Canada for the publishing of a rotogravure weekly supplement for the *Christian Science Monitor* of Boston and the court held the paper to be dutiable, not duty-free standard newsprint as claimed by the importer.

The decision is the most clear cut ruling on the character of standard newsprint yet to be handed down by the Customs Courts. The appellate court held that the paper was dutiable, that it was not standard newsprint, and in declaring that standard newsprint and newsprint are different papers held that the paper in question was not even newsprint.

The case was initiated by the Import Committee of the American Paper Industry about two years ago, when the Customs officials were convinced that the paper was not standard newsprint, and collected duty at the rate for printing paper. The importers protested to the United States Customs Court, represented by Elisha Hanson, Counsel for the American Newspaper Publishers Association. The United States Customs Court held the paper to be duty free as standard newsprint, even thought it was shown to have a basis weight of over 36 pounds, far above the usual weight of paper used for newspaper publication.

In overruling this decision, the higher court made a studied analysis of the tariff provision for standard newsprint, and held that Congress meant some specific kind of paper when it used the word standard and that the paper in question was not chiefly used for newspaper publication.

New Grade of Gummed Papers

Paper Manufacturers Company, Inc., makers of Perfection gummed papers in Philadelphia, announces a new grade of gummed paper which has been especially developed for sticking to aluminum, printing ink and other non porous surfaces.

It was developed for sticking to aluminum but it also sticks perfectly to overprint varnish, spirit varnish, solid color printing ink and many other surfaces to which regular gummed paper will not stick.

This new gummed paper requires no special moistening solution. The gummed side is moistened with water in the usual way. When applied to aluminum, the paper does not leave a stain on the metal when the label is removed.

There should be a good demand for a gummed paper of this kind because aluminum utensils can now be labeled without using a liquid adhesive whereas large quantities were formerly tagged because gummed labels would not stick to the metal.

The Perfection line of gummed papers includes a complete assortment of white and colored papers with various finishes and gummings for general use.

New Morgan Smith Literature

The S. Morgan Smith Company, of York, Pa., has just issued "Power by Smith," a new profusely illustrated catalog of the organization's services. The company has also published two new welding pieces. Copies of these booklets may be secured upon application.

UMERICAL

N OF THE PRINTING SMOOTHNESS OF PAPER

EKK *SMOOTHNESS* TESTER..

ANDARD WHOSE EXACT NUMERICAL MEASUREMENT OF THNESS IS RECOGNIZED THE WORLD OVER.....

ormity in printing quality. Instruments for easuring printing quality can be properly eveloped only in cooperation with printing lants where uniformity of such quality is not nly required but understood.

THE BEKK SMOOTHNESS TESTER

the first instrument that has been developed nd proved of value in measuring printing moothness, one of the primary factors involved printing quality. It was invented, and roved, by Dr. Julius Bekk, one of the outstand- g printing chemists in the world, in the llstein Printing Works, Berlin, Germany, one the most versatile printing plants in the orld, where every kind of printing is produced. r. Bekk, after developing the tester, used it r several years in both control and research ork, comparing the results with the quality of e printing, and demonstrating beyond all ubt that there was a definite correlation be- ween the two. Then and not until then, was e instrument offered for sale to the public. As result the Bekk Smoothness Tester represents e logical culmination of extended scientific search on printing quality, under actual print- g conditions, conducted by a recognized ex- pert on printing from both a technical and practical point of view.

The results of Dr. Bekk's research have since been verified in the use of the Bekk Tester in several of the largest printing plants in the world. This instrument is designed to measure the smoothness of paper under conditions similar to those existing on a printing press at the instant of impression, hence the term "printing smoothness", which differentiates smoothness as measured by the Bekk Tester from visual smoothness.

There are no spring gauges to be calibrated at regular intervals, no possibility of variation in the pressure exerted on the sample, and the results are not affected by variations in atmospheric pressure.

The Bekk Smoothness Tester provides an accurate, simple, and reliable method of proved value for measuring the printing smoothness of paper.

The Bekk Smoothness Tester is a product of the Fuess Works, established over 70 years ago, and noted the world over for precision workmanship in the construction of instruments for scientific research and industrial control.

Literature on request.

R. FUESS, INC.

5 WEST 55th ST. NEW YORK

PAPER TRADE JOURNAL

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Meeting, Springfield, Mass., June 23-25.

AMERICAN PLANT WAGES

American plant wages, in terms of buying power, are higher today than ever before in history, according to a statement issued by John W. O'Leary, president of the Machinery Institute, in connection with the publication of an Institute pamphlet "Technology and the American Consumer."

The average factory worker today is 6 per cent better off than he was in 1929 and about 46 per cent better off than in 1914, according to wage and cost of living indexes compiled by the National Industrial Conference Board, Mr. O'Leary said. Real weekly wages in 1937 have been above 113 per cent of the 1923 average, whereas in 1929 they were 107.2 and in 1914 they were 77.8.

In addition to reporting the relation of factory wages to general living costs the pamphlet shows that prices of twenty widely used machine-made products measured in buying power of factory wages are 63 per cent lower today than in 1914. "Technology and the American Consumer" is the fourth pamphlet of a series based on a study of the relation of industrial mechanization to the American standard of living.

Ten of the twenty machine-made items showed lower dollar costs today than in 1914 despite a 21 per cent increase in the general price level. The number of hours required to earn enough at average factory wages to buy the various products is in all cases lower today than in 1914—the declines varying from 22 to 89 per cent.

The Institute stated that the purchasing power of the consumer's income offers a truer indication of participation in the benefits of technological development than do either prices or wages alone. By citing figures from the National Industrial Conference Board it showed that while the cost of living was 40 per cent higher in 1936 than in 1914, the hourly wages of the average factory worker were two and one-half times as high, and weekly wages were almost twice as high as in 1914. Hourly wages rose from 24.7 cents to 62.4 cents in the 22-year period studied, and weekly wages rose from about $12.50 to about $25.00.

"Clothing for a family of four which in 1914 cost the earnings of 709 hours can be purchased today with the earnings from 349 hours," according to the pamphlet. "The price increased from $175 to $218 but this was far more than offset by the increase in earnings.

"The average man's felt hat, which cost $2.85 in 1914 can be bought today for $2.15, and although it required the earnings of 11½ hours in 1914 it can be purchased with the earnings from 3½ hours today. The time to earn the average pair of work shoes has dropped from nine hours and 15 minutes in 1914 to three hours and 24 minutes today, and the price has dropped from $2.30 per pair to $2.10.

"To purchase one hundred representative articles of house furnishings it required the earnings of about 405 hours, and today only 279. Three-piece bedroom suites, which in 1914 consisted of bed, dresser and washstand, cost the earnings of 104.3 hours, and three-piece suites consisting of bed, vanity or dresser, and chest of drawers, all of superior quality, can be purchased today with the earnings of 77.8 hours.

"A 9x12 Axminster rug can be purchased today with the earnings of 49 hours of work at the average factory wage, whereas the rug of the same size and inferior quality in 1914 cost all a factory worker could earn in 85 hours. The price of baby carriages, in hours necessary to earn them, has dropped from 41 in 1914 to 14 hours and 20 minutes.

"The cost of a set of dinner dishes in 1914 was as much as a factory worker could earn in 40 hours, and today the cost represents the earnings of 17 hours. Electric washing machines which were crude novelties in 1914 cost the earnings of 187 hours of labor as compared to modern ones which can be purchased today with the earnings from 71 hours.

"Electric sewing machines were not available to the average consumer in 1914 but one can be purchased today with the earnings of 68 hours, about the same as a foot-pedal model in 1914. Electric light bulbs in 1914 were so short-lived that they were sold in standard packages of fifty lamps each, and a sixty-watt bulb which cost 43 cents then was inferior to one selling for twelve or fifteen cents today, and the time required to earn the respective bulbs dropped from 1¾ hours to less than twelve minutes.

"An electric fan cost $12.20 in 1914, and in order to buy it the average factory worker spent the earnings of almost a week's work. A superior product today can be purchased from the earnings of less than a day's work.

"An automobile in 1914 cost the earnings of considerably more than a year's work whereas a greatly superior automobile today can be purchased with the earnings from less

than a thousand hours. An average automobile tire for a small car in 1914 cost the earnings of 46 hours as compared to 9.5 hours for a tire for the average late-model car today. The time required to earn the average inner tube has declined from 10 hours and 18 minutes in 1914 to 1 hour and 42 minutes.

"The time required to earn a coaster-brake bicycle in 1914 was 75.5 hours as compared to 41.3 hours to buy a greatly superior model today. To earn enough to paint the average two-story house which required 10 gallons of paint, the average factory worker would have to work 59 hours in 1914 as compared to 25 today.

"A camera at $13.80 today is capable of performance greatly superior to that of an average 1914 product priced at $36.25. The time required to earn it is only about 22 hours as compared to 147. Although a representative collection of drug and toilet articles which cost $1 in 1914 cost $1.39 in 1936, the time required to earn them dropped from 4 hours in 1914 to 2 hours and 12 minutes in 1936.

"The factory worker today can buy as much tobacco with the earnings of an hour and 48 minutes as he could do with the earnings of more than 4 hours in 1914.

The conclusion reached by the Institute as a result of the study is: "The American consumer participates in the benefits of technology by a greater variety of commodities on the market for him to purchase; by adequate supplies of goods to meet his demands; by higher wages in the United States than are paid in any other country in the world; by lower prices for the commodities he desires to buy than would be possible without technological efficiency by a constant rise in quality of products—greater value per dollar expended; and by a constant improvement in the purchasing power of his income—the relationship of his earnings to prices of machine-made commodities."

Michigan Paper Awarded Plaque

The Michigan Paper Company of Plainwell Plainwell, Mich., was presented with a bronze plaque at a Safety Meeting Wednesday, March 31, 1937, as first prize in a Michigan paper mill safety contest for the year 1936, sponsored by the Michigan Mutual Liability Company of Detroit. Presentation was made by Edward Valliere, safety engineer. In addition to the plaque, each member of the safety committee was given a magazine pencil with a gold safety shield on the clip and the words "Safety Award" in gold on the barrel. Talks were given by Dwight L. Stocker, general manager, and Ray Barton, superintendent. The plant record during the year was seven lost time accidents, with a total of 451,118 man hours worked, which gives a frequency rating of 15.52.

Blazing Trail Through Rag Jungle

To further the use of rag-content papers by providing printers and consumers with specific information concerning them, the L. L. Brown Paper Company of Adams, Mass., is now distributing a unique booklet entitled, "Blazing a Trail Through Rag Continent Jungles."

The booklet is profusely illustrated and is executed throughout in a very original and striking manner. Copies may be had from the L. L. Brown Paper Company or any of its distributors.

Production Ratio Report

The following statistics are based upon paper production reports to the American Paper and Pulp Association:

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3%(c)	76.1%	65.8%	.....
February	90.1%(c)	77.9%	70.0%	.....
March	.....	76.0%	70.5%	.....
April	.....	82.3%	70.0%	.....
May	.....	81.6%	69.4%	.....
June	.....	80.7%	72.3%	.....
July	.....	77.3%	64.9%	.....
August	.....	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
Year Average	.....	81.3%	70.5%	.....
Year to Date First 12 weeks	89.9%(c)	76.8%	68.3%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*March 6	88.5%(c)	March 7	79.4%
*March 13	90.0%(c)	March 14	78.5%
*March 20	89.7%(c)	March 21	71.0%
*March 27	89.0%(c)	March 28	75.0%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks			
Ratio Limits	March 6, 1937	March 13, 1937	March 20, 1937	March 27 1937
0% to 50%	41	31	38	27
51% to 100%	274	275	266	182
Total Mills Reporting	315	306	304	209

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported on January 4, 1937 Machine Improvement Survey.

Paperboard Operating Rates

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Months	1937	1936	1935	1934
January	78%	61%	61%	....
February	....	67%	67%	....
March	....	68%	67%	....
April	....	70%	61%	....
May	....	68%	61%	....
June	....	68%	65%	....
July	....	69%	59%	....
August	....	75%	65%	....
September	....	76%	69%	62%
October	....	82%	76%	63%
November	....	79%	70%	56%
December	....	74%	60%	52%

Week ending Feb. 6, 1937—86%
Week ending Feb. 13, 1937—86%
Week ending Feb. 20, 1937—85%
Week ending Feb. 27, 1937—86%

Week ending March 6, 1937—86%
Week ending March 13, 1937—84%
Week ending March 20, 1937—87%
Week ending March 27, 1937—88%

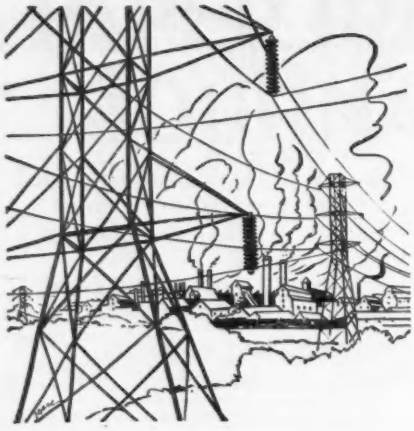
Roy Shaver's New Post

[FROM OUR REGULAR CORRESPONDENT]

LYONS FALLS, N. Y., April 5, 1937—Word has reached here of the appointment of Roy Shaver, a former resident, to the position as manager of construction of the Comeau Bay Division of the Ontario Paper Company, Canada. He is the son of Jerome Shaver, for many years superintendent of the Gould Paper Company, of this village. At Comeau Bay, near Quebec, the Ontario Paper Company has launched a $12,000,000 mill and townsite development which is the largest single enterprise in that country since 1929.

Mr. Shaver has had wide experience in both the management and construction and operation for various paper companies. He had charge of construction for the Donacona Paper Company, the Spanish River Paper Company, and the Escanaba Paper Company, Escanaba, Mich. He also handled the construction for the Taggart-Oswego Paper and Bag Corporation, Oswego.

Prior to entering the employ of the Canadian concern two years ago he was manager of manufacture for the Oswego Falls and Sealright Corporation, at Fulton, for some time. While Mr. Shaver will take charge of the new work at once it is understood that his family will not move from their home at St. Catherine, Ont., to Comeau Bay until summer.



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Bleaching

Causes of Foaming of Drain Waters of the Bleaching Department of the Syaskii (pulp) Mill. E. M. Edemskaya and V. Vladimirtzev, Tzentral. Nauch.-Issledovatel. Inst. Bumazhnoi Prom. Materialui, 1935, nos. 3-4:311-324; C. A. 30:7333.—Foaming in waste waters of the bleaching department is caused by the dissolved organic substances. The foaming is increased by the addition of waste sulphite liquors and drain waters of the acid department. The foam separation in the wells and in the bleaching sections is increased with the increase of carbonates in the drain water. The amount of carbonates is influenced by the alkalinity of bleaching solutions (the use of turbid solutions causes strong foaming.) The presence of residual chlorine in drain waters has no effect on foam formation. Even in the presence of foaming agents, the foaming is caused only by mechanical action on the water, such as suction of air during the flow of drain water or a strong impact with splashing caused by a high drop of drain water into the sewer pipe. Various measures for controlling the foaming are suggested—C.J.W.

Bleaching of Sulphite Pulp with Sodium Hypochlorite. F. Komarov and I. Nagrodskii. Bumazhnaya Prom. 15, No. 4:42-48 (1936); C. A. 30:7334.—The results of experiments in bleaching sulphite pulp by one stage with sodium hypochlorite and by two stages with sodium hypochloride and with sodium hypochloride plus calcium hypochlorite are tabulated and discussed. The results were checked by parallel bleaching with calcium hypochlorite alone. One stage bleaching with the sodium salt gave unsatisfactory results. The two-stage process with sodium hypochlorite gave a good product in respect to viscosity and lignin, alpha-cellulose and ash contents. Substituting calcium for sodium hypochlorite in the first stage gave somewhat inferior pulp, but a better one than is obtained by a first stage bleaching with sodium hypochlorite.—C.J.W.

Purifying Cellulose Fiber for Conversion into Cellulose Derivatives. Brown Co. Brit. pat. 448,582 (May 3, 1935).—After pretreatment with dilute alkali of less than mercerizing concentration, cellulose pulp is refined in alkali of mercerizing strength (not less than 10 per cent) at a sufficiently high temperature (not less than 50°C.) to avoid mercerization and is finally washed with hot water. —A.P.-C.

Sizing

Properties of Paper Sized with Paraffin in the Mass. A. O. Giller. Bumazhnaya Prom. 15, no. 3:46-48 (1936); C. A. 30:7336.—Paper impregnated with 5 and 10 per cent paraffin was obtained by treating sulphite pulp with aqueous suspension of paraffin and precipitating with aluminum sulphate in water. The absorptive power of paper was determined by the increase in weight of strips (4 x 4 cm.) after immersion in water at 15 deg., 60 deg. and 85 deg. for 10 minutes, and freeing from the excess of water, either by blotting between filter papers at 1 kg. pressure or by draining for 2 minutes. In contrast to untreated paper, the water absorption of paraffined papers increases with the temperature, and is 10 times as great at 80 deg., which is greater than the absorptive power of untreated paper. The paraffined papers are not permeable to water at 60 deg. or 70 deg. for 24 hours.—C.J.W.

Aqueous Resin-Soap Solutions. Johannes Schieber and Rudolf Sändig. Kolloid-Z. 74:343-353 (1936); C. A. 30:7245.—The viscosity of aqueous alkali-colophony soaps increases greatly with increasing concentration of resin; this behavior is not shown by shellac soaps. Shellac is peptized by aqueous borax; colophony is not peptized unless a hydroxy-fatty acid is also present. "Schelloid" resin is peptized by aqueous borax and forms a gel. Although glycerol raises the viscosity of fatty-acid soap solutions, it lowers that of resin soap solutions.—C.J.W.

Beating and Refining

An Accurate Method of Sampling Beaters for Consistency. Stephen A. Buckingham. Paper Trade J. 103, No. 12:33-34 (Sept. 17, 1936).—The following method is shown to be very accurate, even if only a single relatively small sample is taken: hold a metal cup, about 3 in. deep and 2 in. in diameter, under the hood, in front of the roll, so that it is filled by the stock which is carried around the roll and falls back into the beater in front.—A.P.-C.

Fiber Refiners and Refining. D. M. Sutherland, Jr. Brit. pat. 448,980, (Oct. 30, 1935).—The refiner consists

of two opposing co-axial rotors having plain working surfaces with radial-flow grooves. One rotor may be stationary, or may rotate more slowly than the other in the same or opposite direction. The pulp is fed at the center and thrown centrifugally to the refining surfaces, which may be metallic or of natural or artificial stone. Rapid and uniform action is claimed.—A.P.-C.

Refining Pulp. W. P. Williams, assignee of F. S. Farley and R. B. Brown. Brit. pat. 445,800 (Dec. 12, 1934).—In a disk refiner, the variations of load on the main motor start, stop and reverse a small motor which adjusts the thrust bearing to maintain the discs closely spaced when working and separated when unloaded. Forms of grooves in the discs are described.—A.P.-C.

Sizing Paper. The Glidden Co. Fr. pat. 798,401 (May 16, 1936).—An aqueous solution of an alkali resinate is mixed with a protein, e.g., casein from soy bean, whereby the resin, e.g., rosin, can form an emulsion or suspension from which a deposit is obtained on the fibers in the form of particles of colloidal dimensions. A buffer may be added to the mixture to reduce the normal alkalinity of the solution. This addition has the effect of hydrolyzing at least a part of the alkali resinate, while a degree of acidity which would cause precipitation of the solids is avoided.—A.P.-C.

Sizing Paper. David M. McQueen and Warner J. Merrill, assignors to E. I. du Pont de Nemours and Co. U. S. pat. 2,047,217 (July 14, 1936).—A fibrous material is treated with an emulsion comprising an aqueous solution of a salt of deacetylated chitin, a water-repellent material such as paraffin which is rendered liquid by heating under the conditions of emulsification, a fixing agent such as aluminum acetate and an acid-resistant wetting agent. —A.P.-C.

Sizing Paper. Richard Silberberger. Brit. pat. 444,787 (March 27, 1936).—Paper is sized by passing through a bath containing animal glue and a hardening agent, which is an addition compound of urea or thiourea and formaldehyde or trioxymethylene, prepared in the cold, the said compound giving off formaldehyde at about 70 deg. C., and is then passed over steam-heated calenders. —A.P.-C.

Paper Sizing Process. Laboratoire EGE. Fr. pat. 799,720 (March 25, 1936).—Rosin size is precipitated by means of a strongly acid aluminum sulphate complex obtained by treating an alumina compound, such as kaolin, bauxite, hydrated alumina, etc., with a large quantity of hot sulphuric acid.—A.P.-C.

Sizing Paper. Papeteries Navarre. Fr. pat. 45,945 (Jan. 8, 1936); addition to Fr. pat. 750,032.—The sizing agent (paraffin) is homogeneously distributed by a pump on a travelling web of paper pulp, which is subsequently heated to 100 deg. C. to secure even distribution of the paraffin. The pump is synchronized with the rate of travel of the web.—A.P.-C.

Fillers and Coating Materials

The Use of Some Titanium Compounds in Paper Making. M. Déribéré. Papeterie 58: 729 (Aug. 25, 1936).—Attention is briefly drawn to the possible use of titanium fluoride, chloride and oxalate for coloring tanning-impregnated cellulosic fibers.—A.P.-C.

Kieselguhr. Maurice Déribéré. Papeterie 58: 681-689 (Aug. 10, 1936).—A general description of its nature, origin, occurrence, composition, properties and applications.—A.P.-C.

The Story of Zopaque. H. L. Rhodes. Paper Trade J. 103, No. 16:21-22 (Oct. 15, 1936).—A historical sketch of the commercial development of this brand of pure titanium dioxide.—A.P.-C.

Manufacture of Pigment for Paper. American Zinc, Lead and Smelting Co. Brit. pat. 445,814 (June 7, 1935). —Zinc sulphide pigment is prepared by rapidly mixing boiling solutions of zinc sulphate and sulphite-free sodium or ammonium thiosulphate containing small quantities of sodium sulphide. The mixture is vigorously agitated, at the same time maintaining a constant pH by addition of sodium carbonate. The precipitate is filtered, washed free from sulphate, and add to the paper furnish. Alternatively, the zinc sulphide may also be precipitated in presence of pulp. The zinc oxide content is claimed to be 3 to 5 per cent.—A.P.-C.

Manufacture of Paper. S. Dunlop, assignee of J. G. Schiller. Brit. pat. 450,120 (June 17, 1935).—A filler (lithopone, calcium carbonate, titanium dioxide, etc.) suspension is sprayed directly on the web as it is fed on to the wire of a fourdrinier machine instead of being mixed with the furnish during beating. A substantially reduced loss of filler in the white water is claimed.— A.P.-C.

Preparation for Filling or Coating Materials for Paper. L. Mellersh-Jackson, assignee of R. T. Vanderbilt Co., Inc. Brit. pats. 448,138 and 448,458 (Dec. 7, 1934).—*No. 448,138*—Finely divided clay (50 to 90 parts), titanium dioxide (6 to 30 parts), alum (2 to 15 parts), quicklime (1 to 10 parts) and trisodium phosphate (not more than 2 per cent) are mixed together in the dry stage. The clay should pass through a 200-mesh sieve. When used as filler, the mixture is stirred to a thick paste with 40 to 60 per cent of water; for coating purposes, starch or casein, etc., is added. *No. 448,458*— Finely-divided precipitated calcium carbonate, slaked lime, and alum are mixed dry, the quantity of alum being regulated so that the mixture is not acidic. It contains 75 to 90 per cent of calcium carbonate, and the ration of lime to alum varies from 1:1 to 5:1. The mixture can be shipped and stored in the dry state.—A.P.-C.

Determination of the Moisture Content of Kaolin Used As Paper Filler. Papyro. Papeterie 58: 826 (Sept. 25, 1936).—In order to obtain a reasonably representative sample and conform with the conditions under which kaolin is used in paper making, it is suggested that 400 g. be taken from a suitable number of bags in a shipment (suitably 1 in every 20 or 30) and that the whole composite sample be dried to constant weight in an oven at 110 deg. to 120 deg. C., instead of heating in a muffle (as is frequently done) which drives off combined water.—A.P.-C.

The Coating Mill Chemist. Norman Clark. Paper Trade J. 103, No. 14:35-36 (Oct. 1, 1936).—A brief discussion of the functions and importance of the chemist in the paper coating mill.—A.P.-C.

Dyeing

The Importance of a Good Color Man. J. R. Roberts. Paper Industry 18, 546-548 (Oct. 1936).—A brief general discussion.—A.P.-C.

Coloring Paper. Imperial Chemical Industries Ltd., P. T. Gale, F. Hamilton and B. H. Livesley. Brit. pat. 449,805 (Jan. 3, 1935).—Copper phthalocyanine dispersed to a particle size of 0.008 to 0.024 mm. is incorporated. —A.P.-C.

Analysis and Testing

Determination of Alum Concentrations. Linton E. Simerl and D. S. Davis. Paper Industry 18:460-461 (Sept., 1936).—A nomograph is given and its use explained.—A.P.-C.

Calculation of the Concentration and Dissociation

Constant of Each Acid Group in a Mixture From the pH Titration Curve of the Mixture. J. O. Burton and S. F. Acree. J. Research Natl. Bur. Standards 16:525-528 (1936) (Research Paper No. 889).—Experimental methods and equations are given for calculating the concentration and dissociation constant of each acid or base in a mixture by use of its complex pH titration curve. The principle is illustrated by means of experimental data for malonic acid. The problems is important as an aid in determining the nature of the acids and bases in (amongst others) pulp and paper products.—A.P.-C.

The Glass Electrode and Its Application to pH Measurement in Paper Making. Maurice Déribéré. Papeterie 58:818-825 (Sept. 25, 1936).—A general explanation of the principle of the glass electrode, the technique of its utilization and its possible applications in pulp and paper making.—A.P.-C.

Ultra-Violet Rays and Fluorescence in the Paper Industry. Maurice Déribéré. Papier 39: 687-696 (Aug., 1936); Mon. Papeterie Belge 16:465-469 (July-Aug., 1936).—An address describing and discussing the use of ultra-violet light and its applications in the paper industry.—A.P.-C.

Measurement of Gelatinization of Wood and Pulp By Water Retention Under Pressure. Joseph L. Mccarthy and Edwin C. Jahn. Pacific Pulp & Paper Ind. 10:1-11 (June, 1936); *Paper Trade J.* 103, No. 9:27-29 (Aug. 27, 1936).—Attempts to determine the degree of gelatinization by alkali solubility, alkali absorption, rate of settling, microscopic observations, and slowness all gave unsatisfactory results. A study of Strachan's method (*Proc. Tech. Sec., Paper Makers' Assoc. Gt. Brit.-Ireland* 6, Pt. 2, March, 1926), based on water retention under pressure and modified by using 10,000 instead of 200 lb. per sq. in., indicated that the per cent water retention is a direct measure of gelatinization. Measurement of linear or volume contraction is also a good index of gelatinization, but is too long and slow for practical purposes.—A.P.-C.

Forming and Testing Pulp Sheets. Anon. Paper *Trade J.* 103, No. 10:42-48 (Sept. 3, 1936).—A revision of TAPPI method T205m, describing in detail the technic of a precision method of forming test sheets from pulps of whatever nature, or after being accorded any degree of beating, and of testing the resulting sheets for their physical properties. In an appendix is described a method for accurately determining the drainage time and drainage factor, which results may for most purposes replace freeness measurements.—A.P.-C.

Bleachability Determination in Relation to Sulphite Cooking. Paul R. Eastwood. Ind. Eng. Chem. 28: 1038-1042 (Sept., 1936); *Paper Trade J.* 103, No. 13: 31-35 (Sept. 24, 1936).—The relation between pulp yield and bleachability (as determined by John and Poppe, *Paper Trade J.* 99, No. 9, 36-37 (1934)) as well as a few simple relationships between bleachability and 2-stage bleaching are given. From these data calculations concerning the most economic bleachability to which the pulps should be cooked in the production of bleached pulps are presented. A study is also made of the effect of temperature schedule on the yield and properties of the resulting pulps.—A.P.-C.

Chemical Examination of Groundwood Pulp. T. Okada. J. Cellulose Inst. Tokyo 12:194-196 (1936).—The fraction (44 per cent) of a groundwood pulp of to domatsu (*Abies sachalinensis*) passing through a 120 mesh screen contained more lignin and less cellulose than the bulk, but the ratio of alpha—to total—cellulose was higher.—A.P.-C.

Controlling Pulp Viscosity During Bleaching. S. N. Pravdin. Bumazhnaya Prom. 15, no. 4:49-55 (1936); C. A. 30:7334.—The viscosity of pulp in the last stages of bleaching is determined in 18 minutes with an accuracy of 2-5 per cent, corresponding to 10-16 millipoises of the xanthate method. Press out a sample (equal to about 0.6 gram of air-dry pulp), disintegrate it on a watch glass with a needle and treat it with 5 cc. of 20 per cent ammonium hydroxide for 3 minutes by kneading with a glass rod. Transfer the mixture into a glass-stoppered flask (70 cc. capacity) containing 35 cc. of the cuprammonium solution (1.5 per cent copper and 20 per cent ammonium hydroxide) and 20 metal balls (2-3 mm. in diameter), shake mechanically for 5 minutes and let rest at 20 deg. for 5 minutes. Replace the glass stopper by a rubber stopper fitted with a calibrated pipet and determine the viscosity in seconds. A graph is given for computing the results in millipoises on the xanthate method. A tentative table is shown for approximate estimation of the corresponding viscosities of the finished dry pulp.—C.J.W.

Methods of Control of (vulcanized) Fiberboard Production. A. O. Giller and E. V. Lipshitz. Bumazhnaya Prom. 15, no. 5:50-58 (1936); C. A. 30:7340.—Methods for control of the various phases of production of vulcanized fiberboard are described. In the examination of paper for vulcanization, the permeability is determined by the time required for water to rise 10 mm. in a strip of paper 15 mm. wide and the swelling by the weight increment obtained after 20 minutes immersion in zinc chloride solution (1.9 density). The Tananaev method of volumetric determination of zinc chloride in vulcanizing solution gives fairly good results. Ferric iron is determined colorimetrically. Details are also given of the determination of cellulose hydrolytic products and non-amyloid celluose.—C.J.W.

New Standards for Testing Paper and Fiberboard. V. I. Istrin. Bumazhnaya Prom. 15, no. 4:55-59 (1936); C. A. 30:7340.—A general discussion is given of the proposed standards for nomenclature of various types and grades of paper and fiberboard and for testing of pulp and papers.—C.J.W.

Machinery

Decortication of Pulp Wood. A. P. Bendruishev. Tzentral. Nauch-Issledovatel. Inst. Bumazhnoi Prom. Materialui, 1935, Nos. 3-4:285-311; C. A. 30:7333.—A discussion of the various methods of debarking pulpwood, based on foreign and Soviet practice and literature.—C.J.W.

The Theory of Pulp Washers. II Practical Washers. W. B. Van Arsdel. Paper Industry 17:943-947 (March, 1936).—A discussion of Brown et al.'s countercurrent pulp washer (U.S. pat. 1,421,664; Can. pat. 204,755) and of C. A. Johnson's countercurrent washer (U.S. pat. 2,-683,782, Sept. 11, 1928), showing that the theoretical equations derived are too complicated and unwieldy to be of any use in calculation. The washers are studied step by step, starting with the weakest effect. The Brown washer (which is of the reservoir-overflow type) represents a compromise in which flexibility of operation has been attained at some sacrifice of effectiveness. In the Johnson washer (which is of the constant-level reservoir type) flexibility of control is attained without any sacrifice of washing effectiveness.—A.P.-C.

Importance of Rifflers in Sulphite Mills. Harry Alfthan. Papier 39:699-703 (Sept., 1936).—A general discussion.—A.P.-C.

Instrumentation Studies. XI

Effect of Humidity in the Physical Testing of Paper: A Survey of the Literature

By The Staff of The Institute of Paper Chemistry

Apparatus for determining the effect of moisture on stretch and shrinkage of paper. *Paper Makers' Mo. J.* 65, no. 1:19, 21 (Jan., 1927).

Description of a British instrument for measuring the stretch of paper when moistened and its shrinkage when dried.

Arendt, A., and Wathelot, E. Effect of atmospheric humidity on the tensile strength of writing and printing papers. *Mon. papeterie belge* 12: 105-113 (Feb., 1932); *T. S.* 95:77.

A general discussion on the effect of hydrometric conditions on the breaking length of writing and printing papers.

Bailey, F. W. Temperature and humidity in paper making. *Paper Makers' Mo. J.* 66, no. 7: 302 (July, 1928).

The relation of temperature to humidity and changes in cellulose produced by changes in humidity are explained.

Bardeen, M. D. Uniform conditions for paper testing. *Paper Trade J.* 92, no. 24: 78 (June 11, 1931); *Paper Mill* 54, no. 23: 18, 50 (June 6, 1931); *C. A.* 25: 5024 (1931).

A brief discussion of the importance and effect of temperature and relative humidity on the results of physical tests on paper, particularly the finer grades, with a plea for the adoption of standard conditions for paper specification tests.

Basberg, A. The effect of moisture and temperature on the strength and elasticity of paper. *Papir-J.* 21, no. 11: 103-5; no. 12: 114-7; no. 13: 123-6; no. 14: 136-9 (July 5, 25, 31, Aug. 11, 1933); C. A. 28: 318 (1934).

Theories of paper strength are discussed. The strength of paper reaches a maximum at 50 degrees and decreases with further heating. At a constant temperature of 20 degrees the maximum is attained at 1-2 per cent moisture. At constant temperature elasticity is practically independent of the moisture of the paper. When a load is applied in the Schopper tester, the strip shows permanent elongation or "slip" before rupturing. This "slip" does not increase with time. Paper heated for some time at 100 degrees will not recover its original moisture content. The higher the heating temperature, the less moisture is reabsorbed. This permanent loss of moisture is accompanied by a permanent loss of strength.

Bell, B. J. Manufactured weather as applied to paper making. *World's Paper Trade Rev.* 102, no. 19: 1414, 1416 (Nov. 9, 1934); *Paper Maker* 88, no. 6: 454-5 (Dec., 1934).

The effect of variations of atmospheric moisture upon certain paper properties is described, and the need of proper air conditioning in finishing stock and printing rooms is emphasized.

Bercovitz, D. Tension tester for paper under different moisture conditions. *Zellstoff u. Papier* 10, no. 1:40 (Jan., 1930).

Description of instrument.

Boerner, Charlotte. Influence of the humidity of the air upon the bursting strength of paper. *Papier-Fabr.* 26, no. 34: 521-2 (Aug. 19, 1928); *Wochbl. Papierfabr.* 59, no. 33: 910-11 (Aug. 18, 1928); *Zellstoff u. Papier* 8, no. 9: 602 (Sept., 1928); *Papier* 31, no. 8: 877-9 (Aug., 1928); *Paper Makers' Mo. J.* 66, no. 11: 491-2 (Nov., 1928); *C. A.* 22; 4814.

Of 13 samples tested, all showed an increase in burst (Mullen) on decreasing the relative humidity from 90 to 65 per cent. On decreasing it further to 40 per cent, 8 samples showed higher strength than at 65 per cent, 5 somewhat lower.

Brown, K. C., Mann, J. C., and Peirce, F. T. Influence of humidity on the elastic properties of cotton. *J. Textile Inst.* 21: 186-203T (1930); *B. C. A.* 1931B: 477,

Breaking load, extensibility at break, stress-strain curves, Young's modulus, etc., have been determined for single hairs of various cottons (raw, soda-boiled, and mercerised) and for filaments of viscose rayon, under different conditions of atmospheric humidity and temperature. The effects of temperature and humidity, the behavior of Young's modulus, the effect of length of specimen, etc., are discussed, and the results are examined statistically. Comparisons are made between the elastic properties of the cotton hairs and those of yarns. It is concluded that differences in specific strength, extensibility, etc., between varieties of cotton can be explained largely as the effect of flaws, rather than of intrinsic specific differences in the cellulose.

Burgess, J. H. Effect of moisture on paper. *Paper Mill* 50, no. 12: 10, 12, 14 (Mar. 19, 1927); *Paper Trade J.* 84, no. 12: 49-50 (Mar. 24, 1927); *Paper Makers' Mo. J.* 65, no. 6: 231, 233, 235, 237 (June, 1927); *T. S.* 85; 240.

A discussion of relative humidity and of effects on paper of variations in relative humidity, showing the troubles which it can cause in the printing shop.

Campbell, Ross. The effect of humidity on the moisture content of paper. *Paper Trade J.* 73, no. 2: 30, 32, 34 (July 14, 1921).

The results of laboratory experiments have proved conclusively that the moisture content of paper is independent of the furnish and kind of paper, is a function of the relative humidity of the air in which the paper is in contact, and is independent of the method of test.

Campbell, Ross. Physical testing of paper as affected by humidity. *J. Ind. Eng. Chem.* 9: 658-61 (1917); *J. Soc. Chem. Ind.* 36: 923; *C. A.* 11: 2543.

The physical tests of a large number of papers of various grades were conducted under varying conditions of humidity. Most of the results decreased 40-50 per cent as the relative humidity increased from 50 to 98 per cent. Stretch in the machine direction increased about 30 per cent and in the cross direction about 40-50 per cent under the same conditions. In all but two cases, the folding test results tended to reach a maximum at about 80 per cent relative humidity. The time of ink penetration decreased 40-50 per cent as the absolute humidity increased from 6 grains per cu. ft. to 11 grains per cu. ft.

Carson, F. T. Analysis of the strength of paper. *Paper*

Trade J. 78, no. 12: 51-56 (March 20, 1934); *Tech. Assoc. Papers* 7: 73-78 (1924).

Discusses effect of humidity on individual fibers, on fiber friction, and the net effect on strength, stretch, folding endurance, tearing resistance, and on the rate of change of different properties.

Carson, F. T. Constant humidity testing cabinet. *Paper Trade J.* 82, no. 8: 231, 233, 237 (Feb. 25, 1926); *Tech. Assoc. Papers* 9: 69-72 (1926); *C. A.* 20: 1340.

A cabinet is described in which paper can be tested without opening the cabinet to the outside air at any time. Air is taken from the cabinet through a blower at the rate of about 1 cu. ft. a min., is bubbled through sulphuric acid of proper concentration to maintain the desired relative humidity, and is then returned to the cabinet. The tester is placed inside the cabinet, which normally has no communication with the outside air. The specimens are handled and the tester is manipulated by means of flexible sleeves which terminate in rubber gloves into which the hands are placed. The method of operation is described in detail. The difficulties encountered, mainly possibility of variations in the relative humidity due to differences in the temperature of the air in the cabinet and of the sulphuric acid, are discussed.

Carson, F. T. Control of relative humidity in a small inclosed space. *Paper Trade J.* 93, no. 18: 71-74 (Oct. 29, 1931); *C. A.* 26: 596.

A description is given of the latest type of constant humidity cabinet for paper testing developed at the U. S. Bureau of Standards, together with a compilation of data for the preparation of solutions having the required relative vapor pressure. Tables are given containing data for sulphuric acid solutions, glycerol solutions, and saturated solutions of certain salts. Attention is drawn to the importance and necessity of temperature control, and several procedures available for the purpose are discussed. The measurement of the relative humidity by means of a modified wet- and dry-bulb psychrometer is briefly described.

Carson, F. T. Maintenance, calibration and use of paper testing instruments. *Paper Ind.* 16:621-626 (Dec., 1934).

This paper is a brief discussion of the chief points in the maintenance, calibration, and operation of common paper testing instruments. The instruments discussed are the psychrometer for measuring the hygrometric condition, the ream weight balance, the dial micrometer for measuring thickness, the tensile strength tester, the bursting tester, the tearing tester, and the folding endurance tester. Those phases of maintenance and calibration that can readily be attended to in any paper testing laboratory, especially those of importance most likely to be neglected, are emphasized.

Carson, F. T., and Worthington, F. V. Hygrometry in paper testing. *Paper Trade J.* 94, no. 2: 34-42 (Jan. 14, 1932); *Tech. Assoc. Papers* 15, no. 1: 253-61 (June, 1932); *T. S.* 94: 256; *B.C.A.* 1932 B: 674; *C. A.* 26: 3375.

The ventilated wet- and dry-bulb psychrometer, if properly designed and used, is the most suitable means of measuring the hygrometric state in the laboratory. A chart was prepared for converting the psychrometric data to relative humidity.

Carsten, H., and Walter, C. H. Measuring moisture on the air-dried paper roll with the sicco-meter. *Siemens Zeit.* 11, no. 6: 267-74 (May, 1931).

Clark, F. C. TAPPI report on paper testing. *Paper* 25: 693-99, 739-43, 777-80, 829-31, 877-79 (1919); *C. A.* 14: 628 (1920).

A revision of the previous work of the Paper Testing Committee of TAPPI as it appeared in *Paper* for Oct. 17 and 24, 1917, and Feb., 1918. Many changes and additions have been made, although some of them can be only tentative until their application in general use has shown conclusively that they may be adopted as standard methods. Among the many recent developments, the subject of "gloss" or "finish" has received much attention, and a method using the Ingersoll glarimeter is described in detail, together with a photograph of the apparatus. In order to simplify rosin determinations, there has been included a photograph and description of an apparatus that will be found not only to save time, but is also more convenient to use and less expensive than the usual Soxhlet apparatus. In conclusion, it pointed out that the actual use to which a paper is put must also be known, as well as tests of the paper, if any information of value is to be gained.

Clark, James d'A. Improved constant humidity room can be built and equipped for approximately $1,000. *Paper Ind.* 12, no. 11: 1859-63 (Feb., 1931); *T. S.* 92: 345; *C. A.* 25: 2287.

A detailed description is given of a constant humidity room, based on, but somewhat modified from, that described by Ruff (*Paper Trade J.* 85, no. 8: 50-52 (1927)), built and equipped at a cost of approximately $1,000. It has been operating with complete satisfaction since the end of 1928.

Connection between the strength and moistness of paper. *Paper Mill* 32, no. 13: 24 (Mar. 27, 1909); *Paper Making* 28, no. 2: 71-72 (Feb., 1909).

Curtis, Frederick A. Humidity in tests of paper. *Paper* 34, no. 18: 800-1 (Aug. 21, 1924); *Paper Mill* 48, no. 33: 4, 6 (Aug. 16, 1924); *Paper Ind.* 6, no. 6; 1038-40(Sept., 1924); *Paper Trade J.* 79, no. 8: 48-49 (1924); *C. A.* 18: 3271; *T. S.* 80: 247.

A discussion of the advisability of changing standard conditions of physical testing from 65 to 50 per cent relative humidity. Curtis recommends that no change be made from the present 65 per cent standard pending further investigation.

Dalen, G. Effect of humidity on testing strength of paper. *World's Paper Trade Rev.* 54, no. 19: 785-6 (Nov. 4, 1910).

Dalen, G. The influence of humidity on the strength of paper. *Mitt. kgl. mech.-tech. Versuchs.* 18, no. 3: 133-43 (1900); *Wochbl. Papierfabr.* 31: 4095 (1900).

Davis, A. E. Humidifiers and paper conditions. *Inland Printer* 83: 64-9 (July, 1929).

Davis, A. E. Humidity control. *Mod. Lithog.* 26, no. 8: 188-92 (1930).

Davis, D. S. Inexpensive electric psychrometer. *Paper Ind.* 13: 1115-16 (Dec., 1931); *C. A.* 26: 2351 (1932).

A brief description of the design of a portable electric psychrometer operated by a single dry cell.

Edqvist, K. Humidity regulator for a paper laboratory. *Svensk Papperstidn.* 36, no. 24: 862-3 (Dec. 31, 1933); *Papir-J.* 22, no. 12: 140-2 (Aug. 15, 1934).

A humidity regulator for paper laboratories constructed by the Regulatoraktiebolaget Armas, Stockholm.

Edwards, C. H. Description of a controlled temperature and humidity room for textile testing at the University College, Nottingham. *J. Textile Inst.* 23, no. 11: T274-8 (Nov., 1932); *C. A.* 27: 847-8 (1933).

Effect of humidity on the strength of paper. *Papeterie* 41: 455 (Oct. 25, 1919).

Expansion and shrinkage of paper under the influence of atmospheric humidity. *Pulp Paper Mag. Can.* 27, no. 9: 309-310 (Feb. 28, 1929).

The hygroscopic properties of paper and testers for measuring the expansion and shrinkage of paper are described.

Fay, H. Water absorption by different fibers under different conditions of atmospheric moisture. *Zellstoff u. Papier* 6: 120-2 (1926).

The water absorption of different fibers at different conditions of atmospheric moisture has been determined and the results are tabulated.

Friedrich, Lothar. Relation between the moisture content and the strength properties of paper. *Papier-Fabr.* 7, no. 1: 7-8 (Jan. 1, 1909); *J. Soc. Chem. Ind.* 28: 159.

It is well known that the mechanical properties of paper are influenced by the percentage of hygroscopic moisture present in the paper at the time of testing. With increased percentage of moisture, there is a decrease in tensile strength and, up to a limit, an increase in the extensibility and in the resistance to creasing and rubbing. In recognition of this variation it is customary, when great accuracy is desired, to allow the paper to remain for a few hours in an atmosphere artificially maintained at a humidity of 65 per cent before testing. The author's investigations have shown that when paper had been stored in an atmosphere of 40 per cent humidity (a condition by no means rare in dry rooms), and was then transferred to the standard atmosphere for testing, 2 hours in this latter atmosphere were not sufficient for the establishment of a new equilibrium. The time required for the complete conditioning of the paper varied with its nature, being least in the case of ordinary "news" paper. With papers of better quality it was necessary to leave the papers in the standard atmosphere for at least six hours before results comparable with those obtained after 24 hours exposure were obtained. For instance, with a normal paper of the class 2a, transferred from an atmosphere of 40 per cent humidity to one of 65 per cent, the hygroscopic moisture rose from 6.3 per cent after 2 hours exposure to 6.7 per cent after 6 hours. Coincident with this change in the moisture-content of the paper, the "breaking length" fell from 5215 to 5030 meters, the "elongation" rose from 3.8 to 4.05 per cent, and the resistance number on Schopper's creasing machine rose from 213 to 224. These variations are far from being negligible, and the time required to establish equilibrium would of course be very much greater if the paper were originally in a drier condition than that corresponding with an atmosphere of 40 per cent humidity.

Great Britain. Dept. of Science and Industrial Research. (Food Investigation Board). The measurement of humidity in closed spaces. Special Report no. 8. 1933. 70 p. Bibliography, p. 66-70.

Griffin, Roger C. Expansion of paper with varying humidity. *Paper Trade J.* 85, no. 5: 51-4 (Aug. 4, 1927); *C. A.* 21: 4067.

A description of a modified form of the Davis "expansiometer", of the technic of its use, and of the results obtained with it in the examination of a number of different grades of papers.

Hamburger, T. A new paper testing device. *Papier-Fabr.* 29, no. 44: 693-6 (Nov. 1, 1931); *C. A.* 26: 1777 (1932).

A device for determining the change in dimensions of paper samples, with change in relative humidity is described. Both the actual elongation and the ratio of elongation on the machine and cross directions give indications of the suitability of the paper for printing operations.

Harrison, R. Paper stretch recorder. *World's Paper Trade Rev.* 101, no. 21: 1698, 1701 (May 25, 1934); *C. A.* 28: 7011 (1934).

A brief description of the Negretti and Zambra stretch recorder for recording the alteration in length of a sample strip of paper over which conditioned air of varying humidities is passed.

Heppenstall, T. E., and Hauff, H. A. Moisture content measurements. *Paper Trade J.* 96, no. 21: 43-5 (May 25, 1933); *Zellstoff u. Papier* 13, no. 9: 441-2 (Sept., 1933); *C. A.* 27: 4075; *B. C. A.* 1933 B: 620.

The use of the Tag-Heppenstall moisture meter as adapted to the testing of pulp and paper is compared with other methods of moisture determination.

Herzberg, W. Influence of atmospheric moisture upon the strength of paper. *Mitt. kgl. mech.-tech. Versuchs.* 13, no. 3: 119-20 (1895).

Herzberg, W. Influence of moisture on paper tests. *Paper Makers' Mo. J.* 60, no. 1: 25, 27 (Jan. 16, 1922); *Paper Trade J.* 73, no. 24: 47-8 (Dec. 15, 1921); *Paper* 29, no. 14: 16-8 (Dec. 7, 1921).

A translation of the chapter in Herzberg's "Papierprüfung" (6th ed. pp. 13-17) dealing with the testing of paper under varied conditions of relative humidity and the influence of moisture on paper tests.

Herzberg, W. "Papierprüfung." 7. Auflage. Berlin, Springer, 1932.

On p. 9-15 the influence of moisture on paper properties (sizing, strength, expansion, and contraction) is discussed.

Herzog, G. Influence of atmospheric moisture on the properties of fibers and the measurement of atmospheric moisture. *Mitt. Materialprüfungsamt,* Berlin, no. 6: 24-30 (1929); *C. A.* 24: 3650 (1930).

Houston, P. L., Carson, F. T., and Kirkwood, R. S. Effect of atmospheric humidity in the physical testing of paper. *Paper Trade J.* 76, no. 15: 237, 239, 241, 243, 245, 247, 249, 251 (Apr. 12, 1923); *Tech. Assoc. Papers* 6: 64-71 (1923); *T. S.* 77:1; *C. A.* 17:2501.

Results are presented of an extended investigation by the Bureau of Standards into the effect of humidity changes on the properties of paper. Data and extracts from the literature indicate that the qualities are determined by relative rather than by absolute humidity. Eleven grades of paper were tested for 9 properties at 8 relative humidities varying from 15 to 83 per cent. The procedure for each test is given and results are discussed. Folding endurance, elongation and tearing resistance increase considerably with relative humidity; tensile breaking strength and bursting strength increase up to about 40 per cent relative humidity and then decrease.

How humidity affects paper. *Paper* 7, no. 11: 22-24 (May 29, 1912).

Humidity control in industry. *Pulp Paper Mag. Can.* 28, no. 20: 751 (Nov. 14, 1929).

Description of Bristol's recording psychrometer instruments.

Importance of humidity of air in testing strength of paper. *Wochbl. Papierfabr.* 48, no. 25: 1107; no. 26: 1149; no. 31: 1362; no. 35: 1533 (June 23, 30, Aug. 4, Sept. 11, 1917).

A relative humidity of 65 degrees must be maintained during testing, since strength properties and elongation are otherwise subject to considerable variations. Directions for maintaining this humidity are given.

Importance of moisture measurements in the manufacture of paper. *World's Paper Trade Rev.* 97, no. 15: 1167-8, 1171-2, 1174 (April 8, 1932).

The principles of the "Siccometer" are described.

Jarrell, T. D. Effect of atmospheric humidity on the moisture content of paper. *Paper Trade J.* 85, no. 3: 47-51 (July 21, 1927); *C. A.* 21: 4067.

The amount of water absorbed and lost by 50 samples of common papers of different grades exposed successively in air of 35, 50, 65, 80, 65, 50, 35, 50, 65, 80, 65, 50, 35, 65, and 35 degrees relative humidity at 70 deg. F. was determined. The results show that the water content of the paper is appreciably higher at 50 and 65 per cent than when approached from a low humidity (35 per cent). Some samples of paper of the same class show a wide difference in water content. Paper containing groundwood, rope or sulphate pulp contains more water at a given humidity than paper made of all rag, coniferous wood (sulphite), broad leaf wood, or a mixture of these. Newsprint has a higher and blotting paper a lower water content than any of the other classes of paper tested. Experiments on the rate of absorption and loss of water when paper is transferred from an atmosphere of 35 per cent relative humidity to one of 65 per cent at 70 deg.F., and then back to 35 per cent humidity show that water is absorbed more rapidly than it is lost. In general, under the conditions of the experiments, 48 hours are required for the attainment of equilibrium when the paper is transferred from 35 to 65 per cent relative humidity, and about 6 days when it is changed from 65 to 35 per cent humidity.

Kiely, Helen U. Comparison of paper tests made at various relative humidities. *Paper Trade J.* 80, no. 6: 207, 209, 211, 215 (Feb. 5, 1925); *Tech. Assoc. Papers* 8:54-57 (June, 1925); *T. S.* 81:80; *C. A.* 19: *1175.*

Mullen, tensile, tear and folding tests were run on numerous grades of paper at 50 and 65 per cent relative humidity. There does not seem to be any decided advantage in 50 per cent over 65 per cent humidity, except as a time saver in the folding test. The most valuable results were obtained at 35 per cent humidity, because at this point the water content of the paper is practically the same as the usual moisture content at the time of shipping from the mill.

Koester, Herman. Paper stretch tester. Assigned to the Bristol Co. U. S. Patent 1,885,209 (Nov. 1, 1932).

A paper-stretch tester, comprising a closed test chamber, a panel swingably mounted therein, means to suspend from said panel at one end a plurality of test strips, tensioning members attachable to the opposite ends of the individual strips, bearing means on said panel for guiding the tensioning members for vertical movement resulting from the stretch of a strip, a scale-bearing member movable with the panel, and respective measuring means pivotally mounted on said panel, actuated by the movement of a tensioning member and cooperating with the scale-bearing member.

Kress, Otto, and Silverstein, P. How paper is affected by humidity. *Paper* 19, no. 25: 13-17, 22 (Feb. 28, 1917); *J. Ind. Eng. Chem.* 9: 277-82 (Mar., 1917); *J. Soc. Chem. Ind.* 36: 449; *C. A.* 11: 2543.

A study of the effect of humidity on the physical tests of papers from a variety of pulps shows: (1) The value of points per pound increases with the decrease in relative humidity. (2) The breaking length values increase with decrease in relative humidity. (3) The stretch of paper increases with increase in relative humidity, the variation being more regular than in the case of (1) or (2). (4) The folding properties are affected to a greater degree than any other property. The investigation shows that relative humidity at the time of testing should be specified where paper is bought on strength specifications.

Lithographic Technical Foundation, Inc. Paper hygroscope. *Instruments* 7, no. 5: 103 (May, 1934).

An instrument designed primarily to indicate whether or not the pile of paper (or other hygroscopic material) into which it is inserted is in hygrometric equilibrium with the atmosphere of the room.

McKee, R. H., and Shotwell, J. S. G. The rate of moisture regain in paper. *Paper Trade J.* 94, no. 22: 35-7 (June 2, 1932); *Tech. Assoc. Papers* 15, no. 1: 273-5 (June, 1932); *C. A.* 26: 4715; *T. S.* 95: 236; *B. C. A.* 1932 B: 718.

It was found that the rate of moisture change varies, for all papers, with the difference between the moisture content actually present and that which would be present if the paper and atmosphere were in equilibrium. The stock used and the presence of sizing or loading material affect the rate of the regain; hence different papers have different rates of regain, but in all cases the resulting curves are similar in general form. Conclusion: Much of the trouble encountered in high-grade printing due to buckling during storage and to changes in size during printing may be minimized by using a moisture content of about 7 per cent, which is the one at which the paper changes least in size and is approximately in equilibrium with most storage conditions found in practice.

McKee, R. H., and Shotwell, J. S. G. Temperature effects on equilibrium between paper moisture content and humidity. *Paper Trade J.* 94, no. 22: 33-5 (June 2, 1932); *Tech. Assoc. Papers* 15, no. 1: 271-3 (June, 1932); *Papier* 35, no. 7: 743-4, 747-8, 751 (July, 1932); *C. A.* 26: 4713: *T. S.* 95: 236; *B. C. A.* 1932 B: 718.

The moisture content of paper in equilibrium with the surrounding atmosphere varies with the absolute humidity for temperatures between 60 deg. and 110 deg. F., and even if the temperature is kept constant, the relation of the moisture content to absolute humidity is closer than the relation of moisture content to relative humidity. Below 60 and above 100 deg. F. variations in temperature affect the relation of moisture content to absolute humidity. At constant relative humidity, changes in temperature affect the moisture content throughout the whole range from 40 to 212 deg. F.

Maddox, Harry A. How humidity affects paper. *World's Paper Trade Rev.* 57, no. 19: 991-4 (May 10, 1912); *C. A.* 6: 2526 (1912).

Martens, A. An arrangement for the regulation of the atmospheric moisture during the testing of paper. *Mitt. kgl. mech.-tech. Versuchs.* 7, no. 1: 2 (1889); *Papier-Ztg.* 14: 523 (1889).

Michailow, N. Change in the paper sheet upon moistening. *Bumazhnaya. Prom.* 7: 450 (1928); *Papier-Fabr.* 26: 654 (1928).

Paper sheets were moistened, measured, dried at 45 degrees and again measured. The variations in length are considerably larger than those in width. The moisture in piles of hand-made sheets increases from the edges towards the center.

Nakano, Michimaro. Influence of the water of imbibition upon the physical properties of paper. *Cellulose Industry,* Tokyo, 6: 35 (Aug., 1930): *C. A.* 25: 3831 (1931).

Water of imbibition in materials increases the bursting

strength, the transparency and the self-sizing degree, and decreases the absorbency and the thickness of paper sheets made from them.

Offen, B. Hygroscopicity of paper develops need for humidity control. *Paper Ind.* 15, no. 3: 142-3 (June, 1933): *C. A.* 27: 4394 (1933).

A discussion of the necessity of humidity control of air in printing establishments.

Paper and humidity. *World's Paper Trade Rev.* 93, no. 8: 658 (Feb. 21, 1930).

The temperature in press rooms should be constant (65 degrees). The degree of humidity is still more important and must be closely controlled.

Paper hygroscope. *World's Paper Trade Rev.* 100, no. 12: 964 (Sept. 22, 1933).

Description of the instrument developed by the research department of the Lithographic Technical Foundation for indicating the moisture content of paper in a pile.

Paquet, T. Effect of mineral fillers and atmospheric humidity on paper. *Mon. papeterie belge* 12, no. 5: 327, 329-30 (May, 1932); *Papeterie* 54, no. 6: 294, 297-298 (Mar. 25, 1932); *Paper Making* 51, no. 11; 341-344, 347 (Nov., 1932); *T. S.* 95: 66, 180; *C. A.* 26; 5205 (1932).

A discussion of the effect of atmospheric humidity and moisture content of kaolin on the composition of paper as calculated from analytical results.

Parker, R. G., and Jackman, D. N. Design, construction, and use of a constant humidity room. *Brit. Launderers' Res. Assoc.* London, Pub. no. 22. 1925. *J. Soc. Chem. Ind.* 44, no. 20: 223-33T (May 15, 1925); *C. A.* 19; 2428 (1925).

The necessity for and requirements of a small constant humidity room for experimental work on textiles are dealt with at some length. The room designed by Parker and Jackman is 6 feet x 7 feet and 7 feet high, and was built against the 2 inner walls of a laboratory. The construction, control and operation of the hair hygrometer used, the method of temperature control, the circulation of air together with the methods of humidifying and drying same, and behavior of the whole installation under different working conditions are all gone into in considerable detail. The article contains numerous photographs and drawings.

Prior, P. H. Design, construction and operation of a constant humidity room. *Proc. Tech. Sec. Papermakers' Assoc. Gt. Britain, Ireland* 9, pt. 2: 152-74; discussion 174-88 (Mar., 1929); *Paper Maker* 76, no. 6: 589-591 (Dec., 1928); *World's Paper Trade Rev.* 90, no. 20: 1638, 1640, 1642; no. 21: 1754, 1756, 1758, 1760; *C. A.* 25: 2601 (1931).

The points to be considered in the design of such a room are discussed, and details are given for the construction of a room 12 feet by 15 feet by 7 feet 10 inches. Provision is made for complete change of air 4 times per hour or for recirculation of the air over the controls when the room is used only for conditioning samples. Humidity and temperature control are effected by diverting part of the air over the correcting devices (humidifier, refrigerator and heater) by means of electric fans controlled by a hair hygrometer and a bimetal strip. The controls normally operate at about 5 min. intervals and to within 1 per cent relative humidity and 1 deg. F.

Prior, P. H. Humidity and temperature variations in an uncontrolled testing room over a period of twelve months. *World's Paper Trade Rev.* 104, no. 7: 489 (Aug. 16, 1935).

Average R. H. over the year was 56 per cent range; Jan. 34-64 per cent; August, 42-90 per cent.

Prior, P. H. Rapid laboratory sheet making and testing. *Paper Trade J.* 93, no. 25:35-38 (Dec. 17, 1931).

Rasch, R. H., and Stone, G. O. Estimating stability of paper by heating. *Paper Trade J.* 95, no. 4: 28-30 (July 28, 1932); *C. A.* 26: 5206 (1932).

The reproducibility of results in aging tests of paper (determination of folding resistance before and after heating for 72 hrs. at 100 degrees) is discussed in relation to: (1) lack of homogeneity of the structure of paper, (2) possible variations between different folding testers, (3) variations in humidity during testing, and (4) variations in oven conditions; suggestions are offered for minimizing errors resulting from these variables, and data are presented showing the degree of reproducibility to be expected when the suggestions are followed.

Reed, E. O. Atmospheric conditions for paper testing. *Paper Trade J.* 82, no. 18; 55-7 (May 6, 1926); *C. A.* 20: 2071; *T. S.* 83: 121.

Standard atmospheric conditions of 70-75 deg. F. and 50% relative humidity are recommended and reasons given for the recommendation.

Reed, E. O. Discussion of standard atmospheric conditions for paper testing. *Paper Trade J.* 78, no. 9: 45-6 (Feb. 28, 1924); *Ind. Eng. Chem.* 16: 262-3 (1924); *World's Paper Trade Rev.* 81, no. 18: 1422, 1424 (May 2, 1924); *T. S.* 79: 66; *C. A.* 18:1197.

The Government Printing Office has adopted as standard conditions for paper testing 50 per cent humidity at 70-75 deg. F., on account of the low humidity prevailing in heated buildings during winter. Tests made under these conditions show properties which are observed in the paper in actual service. The average outdoor humidity is approximately 70 per cent; indoors it is approximately 24-33 per cent and when artificial heat is used it becomes lower than that of the driest known climate.

Reed, E. O. Effect of temperature and relative humidity on the folding endurance of papers. *Paper Trade J.* 79, no. 25: 55-7 (Dec. 18, 1924); *World's Paper Trade Rev.* 83, no. 4: 290 (Jan. 23, 1925); *Paper* 35, no. 7: 269-72 (Dec. 4, 1924); T. S. 81: 70.

The results of tests show that the atmospheric effect, either of temperature or of relative humidity, is not the same on all kinds of paper, or even on papers of the same general type, so that it is impossible to secure any factor for calculating folding endurance results at one condition to equivalents at another or standard condition. Temperature should be controlled to within about plus or minus 5 deg. F. The author recommends adoption of 70 to 75 deg. F. and 50 per cent relative humidity as standard conditions for determining folding endurance, and discusses his reasons.

Reed, E. O. Humidity standard for paper. *Paper* 34, no. 19: 848-9 (Aug. 28, 1924); *C. A.* 18: 1197 (1924).

Abstract same as that under "Discussion of standard atmospheric conditions for paper testing", above.

Reed, E. O. Relative humidity and paper testing. *Paper Trade J.* 79, no. 15: 49-50 (Oct. 9, 1924); *Paper* 34, no. 25: 1133-4 (Oct. 9, 1924); *C. A.* 18: 3718; *T. S.* 80: 189.

Additional data are presented in favor of the adoption of a standard testing condition of 50 per cent relative humidity, because it is more in harmony with actual indoor atmospheric conditions, and gives a direct comparison between the tests and actual serviceability of the paper.

Reed, E. O. The testing of paper durability, permanency and humidity. *World's Paper Trade Rev.* 90, no. 7: 524, 526, 528 (Aug. 17, 1928).

Press room conditions in the U. S. Govt. Printing

Office have been considerably improved by elimination of low relative humidity and the maintenance of uniform atmospheric conditions. There exists a considerable difference between the atmospheric conditions of Europe and the U. S.

Relation of humidity to physical qualities of paper. *Paper Makers' Mo. J.* 60, no. 9: 330-1 (Sept. 15, 1922).

Rieth, E. Effect of drying on the strength of paper. *Papier-Fabr.* 27: 385-7 (1929): *C.A.* 23: 5587 (1929).

Sample sheets of a beaten pulp dried freely in the air gave a tensile test of 5800 meters breaking length and 2400 double folds, while others dried at 103 deg. on a cylinder under tension tested 8300 meters and 1100 folds. The shrinkage on drying and water content after seasoning at 65 per cent relative humidity were lower in the latter case. Other methods gave intermediate values. Drying on the cylinder to various moisture contents showed that the more the paper was dried, the less its equilibrium moisture content, and that drying to below 8% moisture was necessary to give maximum tensile strength. It is pointed out that the degree of hydration is an important factor in strength testing, that this may vary even with the same pulp beaten to the same slowness in different ways, and that control of drying procedure offers a way of controlling the effect of this variable in testing.

Rieth, K. Contribution to strength determination (Testing pulp for strength) *Papier-Fabr.* 27, no. 45: 693-4 (Nov. 10, 1929); *C. A.* 24: 3362 (1930).

The effect of moisture content on strength, and of sieve character on the freeness determination, are discussed as sources of error.

Ruff, H. T. Constant humidity testing room. *Paper Trade J.* 85, no. 8: 50-2 (Aug. 25, 1927); *C. A.* 21: 4067.

A detailed description is given of a small constant humidity and constant temperature room developed in the laboratory of the Mead Pulp and Paper Co., Chillicothe, O., designed to give satisfactory regulation at a moderate cost.

Samuelsen, S., and Stephen, E. Supplying laboratories with constant humidity and pressure. *Papir-J.* no. 20: 211-14 (Dec. 15, 1931); *C. A.* 26: 4715 (1932).

Apparatus for maintaining small paper-testing rooms at 20 ± 0.2 deg. and 65 ± 1 per cent R. H. are described. Ice is used for cooling.

Schinkel, George. The influence of atmospheric moisture on paper. *Wochbl. Papierfabr.* 54, no. 32: 2268-72 (Aug. 11, 1923); *C. A.* 17: 3918; *T. S.* 77: 236.

When paper absorbs moisture 2 kinds of phenomena occur, a swelling of the fibers, and a contraction of the sheet. With moist paper under pressure, the contraction changes to expansion under certain conditions. The chief requirements for paper storage are that the atmospheric moisture and temperature be as nearly constant as possible. Data are given from the experiments with 12 paper samples in the form of disks exposed to humidities of 96, 85, and 70 %. The surface changes with paper made from chemical pulp are greater than those made from mechanical pulp.

Schlichting, W. G. Air conditioning. *Paper Mill* 54, no. 49: 14, 16 (Dec. 5, 1931); *Paper Trade J.* 93, no. 18: 69-70 (Oct. 29, 1931); *C. A.* 26: 596 (1932).

A discussion of the effect of variations in atmospheric conditions on paper, the necessity for air conditioning in press rooms and the temperatures and humidities which should be maintained, the necessity of cooperation between the paper maker, printer, lithographer, and air-conditioning engineer to the end of establishing standard operating conditions in all press rooms, and the necessity for a constant temperature and humidity room in every paper mill laboratory, with a description of the equipment required and results which may be expected.

Scribner, B. W. Atmospheric conditions for paper testing. *Paper Trade J.* 82, no. 18: 57-8 (May 6, 1926); *C. A.* 20: 2071.

Standard atmospheric conditions of 70-75 deg. F. and 65 per cent R. H. are recommended, and reasons given for the recommendation.

Seborg, C. O., Doughty, R. H., and Baird, P. K. Effect of relative humidity on the moisture content and bursting strength of four container boards. *Paper Trade J.* 97, no. 15: 37-42 (Oct. 12, 1933); *C. A.* 27: 5973 (1933).

Hysteresis is exhibited in the moisture content which, at a given relative humidity, depends on whether equilibrium was reached by adsorption or desorption of water. The Mullen test varied with the water content of the board, reaching a maximum at about 6 per cent, corresponding to a relative humidity of about 40 per cent, on adsorption or 30 per cent on desorption, and falling off very rapidly above 12 per cent water content. At 65 per cent relative humidity, temperature variation from 72 to 80 degrees F. had a very minor effect on water content and Mullen test. The hysteresis effects on strength and on water content were similar. Bringing sheets to a relative humidity of over 90 per cent and then drying to the optimum moisture content resulted in a marked permanent increase in strength, possibly brought about by the release of stresses set up during manufacture.

Sindall, R. W. Expansion of fibers by dampening. *Paper Makers' Mo. J.* 46, no. 5: 165 (May, 1908); *C. A.* 2: 2155 (1908).

This article discusses the behavior of papers when damp. The amount of expansion shown by several animal and vegetable fibers is given.

Strachan, J. The nature and functions of hygroscopic water in cellulose and paper. *Paper Maker* 85, no. 4; *TS* 81-2 (April 1, 1933); *C. A.* 27: 5967 (1933).

The adsorbed or hygroscopic moisture content of paper or cellulose is determined by the collodial structure and micelle size of the fibers. Its presence affects such physical properties as pliability, elasticity and printability, such chemical properties as aging and permanance, and papermaking processes, such as calendering and dyeing.

Sutermeister, E. Relationship of moisture and paper. *Paper Maker* 50, no. 1: 41-4 (July, 1915); *Pulp Paper Mag. Can.* 12, no. 23: 684-7 (Dec. 1, 1914); *Paper Trade J.* 59, no. 26: 44, 46 (Dec. 31, 1914); *C. A.* 9: 713.

Printers attach insufficient attention to the proper conditioning of paper as regards humidity. The author's tests show that between 29 and 70 per cent R. H. the expansion of paper is nearly proportional to the rate of change in humidity, but above 70 per cent expansion becomes more rapid. There seems, however, to be no fixed relation between the extent to which humidity affects paper and the printing qualities of the sheet. Change in dimension is greater in cross direction than in machine direction. Coating causes very slightly increased expansion. Seasoning does not diminish the susceptibility of the paper to change with humidity. Exposure to 95 per cent humidity, and subsequent drying in many cases induces a permanent shrinkage which might conceivably cause serious misregister.

TAPPI. Paper testing methods. New York, Lockwood Trade Journal Co., 1929.

On pp. 38-44, the influence of the hygrometric state on

paper testing is discussed. TAPPI has adopted 65 per cent R. H. and 70 deg. F. as the official standard hygrometric state.

TAPPI. Paper testing methods. Atmospheric conditions. Sulphur. Fiber composition. Stains. *World's Paper Trade Rev.* 88, no. 3: 202, 204 (July 15, 1927); *Paper Trade J.* 83, no. 11: 51-55 (Sept. 9, 1926).

The first section discusses conditions of relative humidity and temperature under which the tests should be carried out.

TAPPI Standard humidity conditions for paper testing. Special report no. 171. N. Y., TAPPI, 1932. 29 p. Mimeographed.

This is a report of an inquiry made of a number of laboratories maintaining constant humidity rooms and gives the various conditions and equipment used by these laboratories. Also discusses difficulties encountered.

TAPPI. An economical de-humidification system. Special Report no. 197. N. Y., TAPPI, 1933. 9 p. Mimeographed.

Writer is installing cold water coils for above purpose and is anxious to know whether any members have operated such equipment and with what success. 18 replies and suggestions.

TAPPI. Standards. New York, TAPPI, 1932.

Conditioning of paper. Official standard T402 m — July 1926. Tentatively revised in *Paper Trade J.* 99, no. 21: 38 (Nov. 22, 1934).

Technical Section, Paper Makers' Association of Gt. Britain and Ireland. Interim report of the Pulp evaluation committee. Evaluation of paper pulp. 1929. Chap. XV, p. 104.

Gives the effect on strength of variations of relative humidity on sulphate and mechanical pulps.

Turner, A. J. Relation between atmospheric humidity and breaking strengths and extensibility of textile fabrics before and after weathering. *J. Textile Inst.* 19: 101-68T (1928); *B. C. A.* 1928 B: 563.

Doped and undoped flax and cotton fabrics, ramie and jute fabrics, brown paper, cellon sheet, cellulose acetate film, and pigmented nitrocellulose varnish film were tested in an Avery machine at various relative humidities from 30 per cent to saturation, before and after weathering for different periods. The warp of cotton fabrics is more affected by humidity changes than the weft, and so are coarse more than fine fabrics, whilst mercerized cotton fabrics are less sensitive to such changes than unmercerized. Physical differences, such as differences in the counts and twist of yarns from the same fibre, and the calendering of fabrics, do not appreciably alter the "humidity-strength coefficient" of the material (i.e., the percentage increase of strength for a 1 per cent increase of humidity expressed in terms of the strength at 70 per cent R. H.), but chemical treatments, such as the mercerization of cotton, or the cuprammonium or bitumen proofing of flax fabric, cause considerable changes in this factor. The effect of doping depends largely on the extensibility of the material treated, whilst the effect of humidity on doped fabric corresponds roughly to the sum of its separate effects on the fabric and on the dope. The humidity-strength coefficients of all classes of fabrics are greatly changed as a result of weathering, the strength and extensibility of the weathered fabric decreasing with increasing humidity.

Veitch, F. P. and Reed, E. O. Constant temperature and the humidity room for the testing of paper textiles, etc. *J. Ind. Eng. Chem.* 10: 38-44 (Jan., 1918); *Paper Trade J.* 66, no. 14: 26, 28, 30, 32, 38, 40, 42 (Apr. 4, 1918); *C. A.* 12: 243 (1918).

The authors describe in detail the constant temperature and humidity at which the U. S. Bureau of Chemistry makes all its physical tests of paper. Temperature and relative humidity are automatically maintained at 70 degrees F. and 65 per cent respectively. Among the industries in which the control of humidity is important are mentioned the manufacture of textiles, fuses for munitions, motion picture films, and tobacco. Moreover, humidity control is being applied to the ripening of fruit, curing of cheese, drying of lumber and to the manufacture of leather goods.

Walter, Ludwig E. Influence of atmospheric humidity on paper. *Papier-Fabr.* 27, no. 24: 369-71 (June 16, 1929); *B. C. A.* 1929B: 749; *C. A.* 23: 5586.

The rate of change of weight and length with varying humidity of strips of 13 papers from 3 mills was determined at 10 degree and 740 mm. barometric pressure. The samples were cut from the center of the web and stored 6-8 weeks in a cold dry room before testing. It was found that: (1) Moisture was absorbed or given up more rapidly from strips cut in *(a)* rather than across *(b)* the machine direction; (2) at low humidities the maximum moisture content of the paper increased more slowly, in the middle range at the same rate, and at high humidities faster than the moisture content of the air; (3) the elongation in *b* (too small to be determined in *a*) was proportional to the water taken up, and hence bore the same relation to relative humidity; (4) the absorption and giving up of water at ordinary temperatures is entirely reversible; (5) the elongation is partially irreversible.

Weber, C. G., and Snyder, L. W. Reactions of lithographic papers to variations in humidity and temperature. *Bur. Standards J. Research* 12, no. 1: 53-65 (Jan., 1934); *Bull. Inst. Paper Chem.* 4, no. 7: 164 (Mar., 1934).

Further studies of the Bureau of Standards are described for obtaining scientific data on the relations of lithographic papers to variations in atmospheric humidity and temperature. The dimensions of papers vary directly with the moisture content, regardless of the cause of the moisture changes. Moisture content is influenced by relative humidity, temperature and history of conditioning. Humidity changes are the most important, temperature and history of conditioning are less important, but of sufficient magnitude to call for close control. The usual sizing materials have little influence on the moisture content response of paper to changing relative humidity except with respect to the rate of change. Both surface sizing and mineral coatings increase the total dimensional changes per unit of moisture content change.

Wells, Sidney. Influence of moisture on tests of container board. *Paper Ind.* 4, no. 9: 1245-7 (Dec., 1922); *Paper Trade J.* 75, no. 23: 47-9 (Dec. 7, 1922); *T. S.* 76: 58.

Curves are given showing the relation of relative humidity of the air to Mullen test, tensile strength, folding endurance, and tearing strength of boards and of papers made from typical stocks which find their way into board manufacture.

New Weaver-Wall Installations

Two new Taylor & Stiles Rag Cutters have been installed in the Weaver-Wall Mill, Avery, Ohio. They were sold through the office of Mansel L. Rankin, 257 Jackson street, Sandusky, Ohio.

This mill has also installed a Goodrich Vulcalock Rubber Covered Couch Roll which was sold by Mansel L. Rankin.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Parchment, Mich.—The Kalamazoo Vegetable Parchment Company, Parchment, near Kalamazoo, manufacturer of bond, waxed and other paper specialties, has approved plans for new one-story addition to mill, 94 x 529 feet, reported to cost over $250,000, with equipment. Superstructure will be placed under way at early date. M. C. J. Billingham, Kalamazoo, is architect and engineer, and will supervise erection. New unit will increase present mill capacity by about 15 per cent.

St. Louis, Mo.—The Waxide Paper Company, 1525 South Newstead street, manufacturer of waxed and other processed paper stocks, has awarded general contract to the George Moeller Construction Company, 3007 Wyoming street, St. Louis, for proposed new one-story addition to plant, recently noted in these columns, to be 55 x 255 feet, estimated to cost over $75,000, with equipment, instead of smaller amount, previously reported. Work will be placed under way at once. Award for installation of an air-conditioning system has been made to the York Ice Machinery Company, York, Pa. Leonard Haeger, 3844 Utah Place, St. Louis, is architect. M. W. Denebeim is general manager.

New York, N. Y.—The American Can Company, 230 Park Avenue, is carrying out on expansion program at fiber can plants for production of milk containers, and will install equipment and facilities to develop a gross output of about 2,000,000 paper containers of this type per week, as compared with approximately one-half that volume a year ago. It is expected to reach the capacity schedule noted during the coming summer.

Nashua, N. H.—The Nashua Gummed and Coated Paper Company, Franklin street, has arranged for the sale of 6500 shares of common stock, a portion of proceeds to be used for erection of new addition to mill. As recently noted in these columns, general contract for new unit has been awarded to the Morton C. Tuttle Company, Park Square Building, Boston, Mass., and erection is being placed under way. Structure will be used for increased capacity in the line of gummed and other processed paper stocks. Leland & Larsen, 20 Providence street, Boston, are architects and engineers.

Albany, N. Y.—The A.P.W. Paper Company, 1273 Broadway, manufacturer of tissue paper stocks, has awarded contract for structural steel framing for new one-story addition on Bridge street to James McKinney & Son, 925 Broadway, Albany. New structure will be used largely for storage and distribution, and is estimated to cost about $45,000, including equipment. General erection contract was let recently to J. P. Sewell, 372 Hudson Avenue, Albany.

Orange, Va.—The Virginia Rayon Mills, Inc., manufacturer of cellulose rayon products, has asked bids on general contract for new one-story addition to local mill, and will begin work on superstructure soon. It is reported to cost over $65,000, with equipment.

Kalamazoo, Mich.—The former local plant of the Star Paper Company has been taken over by the Kozy Coach Company and will be used for another branch of production in the future.

Los Angeles, Cal.—Acoutipulp, Inc., has taken out a State charter with capital of 2500 shares of stock, to manufacture special sound-absorbing pulp board specialties for walls, ceilings, etc., and is planning extensive operations. As recently noted in these columns, new company has taken over property at 1141 East Sixty-third street, Los Angeles, and will operate a plant at that location. The incorporators include Joseph E. Bednar and Clayton Straub. Nathan Most is one of the heads of the new company.

Cornwall, Ont.—The Howard Smith Paper Mills, Ltd., McGill street, Montreal, Que., manufacturer of bond and writing papers, and other paper stocks, has plans under way for new addition to mill at Smithville, Cornwall, to be one-story, estimated to cost over $100,000, including equipment. It is proposed to begin erection this spring. J. C. Day, 620 Cathcart street, Montreal, is engineer.

Quebec, Que.—Fire recently damaged a portion of plant of the Royal Paper Box Company, 82 Boulevard Langetier, manufacturer of folding and other paper boxes and containers. An official estimate of loss has not been announced. The damage will be replaced.

Morris, Ill.—The Morris Paper Mills, manufacturers of manila and other paper stocks, box board products, etc., have approved plans for new addition to mill, to be one-story, 100 x 518 feet, designed primarily for storage and distributing service. New unit is reported to cost over $85,000, with equipment. General contract has been let to Hansen & Petersen Company, 600 South Desplaines street, Joliet, Ill., and work will be placed under way at early date.

Buffalo, N. Y.—The F. N. Burt Company, Ltd., 514 Seneca street, manufacturer of paper boxes and containers, is giving employment to more than 900 operatives in different departments, with production on a capacity schedule. The lithographed carton division, where considerable additional equipment was installed during the past year, is operating on a high production basis. It is expected to hold to present operations for an indefinite period. J. Hardy Paterson is general manager.

Fort Dodge, Iowa—The National Gypsum Company has approved plans for additional units at local plant to provide large increase in present capacity. Work has been placed under way on a new mill unit to be equipped for wallboard production, with facilities for an annual output of about 75,000,000 square feet of such material. It is estimated to cost close to $500,000, including machinery.

Two other buildings will be erected at the plant, one of which will be used for storage and distribution, and considerable new equipment installed in different production divisions. Entire project will cost about $900,000. Main offices of company are at 190 Delaware avenue, Buffalo, N. Y.

Kingsport, Tenn.—The Mead Corporation, Chillicothe, Ohio, has approved plans for expansion and improvements in branch paper mill at Kingsport, specializing in the production of book and other paper stocks. Work will include new mill units and installation of equipment for large increase in present capacity. A fund of $2,609,875 has been authorized for the work, which will be carried out over a period of months. The appropriation is part of company financing through the sale of bonds and stock, totaling about $10,000,000, of which $4,500,000 will be devoted to mills and equipment installations, including subsidiary interests, the Brunswick Pulp and Paper Company and St. Joe Paper Company, now constructing new plants at Brunswick, Ga., and St. Joe, Fla., respectively, previously referred to in these columns.

Atlanta, Ga.—The Southern Envelope Company, manufacturer of commercial envelopes and kindred paper products, has leased building at 261 Walker street and will occupy for new paper-converting plant. Structure will be remodeled and improved, with installation of equipment for initial capacity of about 300,000 envelopes per day. It is proposed to have plant ready for operation soon. Herman Zotti is head.

Corning, N. Y.—The Corning Fibre Box Corporation, Hammel street, manufacturer of corrugated fiber boxes and containers, has asked bids on general contract for new one-story addition to plant, recently referred to in these columns, and will soon place award. It is estimated to cost about $50,000, with equipment. Superstructure is scheduled to begin in April. A. N. Tietzel, 86 East Market street, Corning, is architect.

Portland, Ore.—The Mailwell Envelope Company, 2137 S. E. Eighth street, manufacturer of commercial envelopes and kindred products, has awarded general contracts to Reimers & Jolivette, Railway Exchange Building, for new one-story plant unit at 2136 S. E. Seventh street, for which superstructure will be placed under way at once. It is estimated to cost close to $25,000, including equipment.

Appleton, Wis.—The Riverside Paper Corporation, manufacturer of bond and ledger papers, etc., has completed plans for new one-story addition to mill and will begin erection at early date. General contract has been let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis. No estimate of cost has been announced.

Dayton, Ohio—The Reynolds & Reynolds Company, 931 Washington street, manufacturer of paper products, is completing plans and will soon take bids on general contract for new two-story and basement plant unit, totaling abou 30,000 square feet of floor space, to be equipped for largely increased capacity. A section of new building will be used for office service. It will cost close to $60,000, including equipment. Proposed to begin work on superstructure early in the spring. Schenck & Williams, Third National Bank Building, Dayton, are architects. E. S. Reynolds, Jr., is president.

Alexandria, Ind.—Paper-making machinery and equipment at the mill of the Alexandria Paper Company, Alexandria, idle for the past seven years, has been sold to Abe Cooper, Lodi, West Hiawatha boulevard, Syracuse, N. Y., dealer in used equipment, iron, metals, etc. The equipment will be removed from the plant at once and transferred to an Eastern locality, where it will be utilized in part in another mill. The plant site, comprising about 30 acres of land, and mill buildings, are not included in the transaction.

New York, N. Y.—The Dominion Paper Box Company, 819 East Fifth street, manufacturer of paper boxes and containers, has leased a floor in the building at 28 East Third street, and will occupy for expansion.

Laurel, Miss.—The Masonite Corporation, manufacturer of paperboard products, has placed its new mill units in service, following construction for a number of months, previously referred to in these columns, and is now producing and marketing four new products, including "Presdtex", a new wood fiber wallboard; new insulating board sheeting, a product with wood fiber base and asphalt coating; another insulation board specialty, known as "Masonite-Canec"; and a "fill in" insulation board product.

Marseilles, Ill.—The National Biscuit Company has plans maturing for expansion and improvements in carton manufacturing plant at Marseilles, to include the erection of new buildings and installation of machinery for large increase in present capacity. Work will be carried out over a period of months and is estimated to cost over $850,000, with equipment. E. F. McMahon is manager at the mill. Company headquarters are at 449 West Fourteenth street, New York, N. Y.

Tonawanda, N. Y.—Tonawanda Boxboards, Inc., Clayton and Tonawonda streets, a division of the Robert Gair Company, Inc., New York, N. Y., is running on a high capacity schedule at local mill, giving employment to about 275 persons in different departments, or approximately 20 per cent more than a year ago at this time. It is expected to hold to present production basis for an indefinite period.

Gateshead, England—Fibreboard Boxes, Ltd., recently organized, has construction under way on new plant on the Team Valley Trading Estate, Gateshead, for the manufacture of fiberboard boxes and containers. It will comprise a main one-story unit and several auxiliary buildings, and will be equipped to manufacture both large and small container units, including box units of collapsible types. New plant is expected to be ready for service in June and will cost close to $100,000, including machinery. A. J. Nicholls heads the new organization.

Detroit, Mich.—The Detroit Envelope Company has been incorporated with capital of $50,000, to manufacture and deal in commercial envelopes and kindred paper products. New company is headed by Walter Laib, 530 Piquette avenue, Detroit.

New York, N. Y.—Sanderson Products, Inc., has been chartered with capital of 100 shares of stock, no par value, to manufacture and deal in paper products of various kinds. New company is represented by Kiralfy & Koch, 551 Fifth avenue, New York, attorneys.

Cortland, N. Y.—The Cortland Bag and Paper Company has been organized with capital of $10,000, to manufacture and deal in paper bags and other paper containers and commercial paper goods. New company is represented by Albert Haskell, Jr., Second National Bank Building, Cortland.

New York, N. Y.—The Clinton Case Company, Inc., has been organized as an interest of the Excelsior Stationery Company, 116 Nassau street, with capital of $20,000, to manufacture and deal in cardboard cases and containers for jewelry, manicure sets and kindred purposes.

New York, N. Y.—The People's Bag and Paper Corporation has been organized with capital of $20,000, to manufacture and deal in paper bags and containers of various kinds. New company is represented by Arthur Rosenberg, 1440 Broadway, attorney.

1937 TAPPI Fall Convention

The first meeting in preparation for the 1937 Technical Association of the Pulp and Paper Industry Fall Convention was held at the DeSoto Hotel, Savannah, Ga., on April 1, preceded by a dinner at 7:00 o'clock. Those present were: E. George Butler, W. W. Henderson, Mrs. D. G. Moon, D. G. Moon, W. H. Walker, H. Bradley Johnson, Charles Carpenter, G. T. Wegner, J. K. Copps, L. D. Smiley, A. G. Ready, P. F. McMahon, O. W. A. Rodowski, T. R. Jones and R. G. Macdonald.

Mr. Macdonald opened the meeting with a brief history of TAPPI and outlined the general functioning and requirements pertaining to the fall convention.

Col. E. George Butler advised that the full capacities of the Chamber of Commerce were available to all of the committees, and they would provide personnel and cooperate to the utmost of their ability. Col. Butler also advised that a local entertainment and reception committee, under Judge Saussy, would be organized.

The Convention will be held at the DeSoto Hotel, Savannah, on October 18-20, 1937.

The following committees were appointed:

General Chairman—D. G. Moon.
Vice-Chairman—W. W. Henderson.
Vice-Chairman—Charles Carpenter.
Arrangements—W. H. Walker.
Registration—H. B. Johnson.
Publicity and Printing—C. Carpenter, chairman and E. G. Jones.
Administration—W. W. Henderson.
Finance and Accounting—G. T. Wegner.
Transportation—J. K. Copps.
Mill Visits—C. Carpenter.
TAPPI Ladies' Committee—Mrs. D. G. Moon.
TAPPI Entertainment Committee—to coordinate with local entertainment and reception committee—A. G. Ready.
Dinner Dance—L. D. Smiley.
Golf—P. F. McMahon.

Mr. Calder has been selected to be chairman of the Advisory Committee.

The next meeting is to be held at 5:30 o'clock at the Savannah Hotel, Midway Club, April 8, by which time the committees will be ready to report.

New Fairbanks-Morse Bulletin

A new Fairbanks-Morse bulletin (No. 1600) describes that company's line of polyphase wound-rotor or slip-ring, ball-bearing, induction motors.

The high starting torque and low starting current characteristics of these wound-rotor motors make them ideally suited to applications where the relatively high starting current of squirrel cage motors would be objectionable—in driving high-inertia, slow-starting loads, or where the size of motor required is relatively large with respect to the power supply.

Slip-ring or wound-rotor motors can be operated at either constant or regulated varying speeds, a feature that qualifies them for certain types of service for which squirrel cage induction motors are not suited. With proper regulating control, the speed can be varied between half and normal with load connected.

J. H. Fedeler's New Post

J. H. Fedeler has been appointed sales manager of Filtration Engineers, Inc., with offices at the plant, 858 Summer avenue, Newark, N. J.

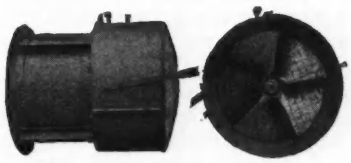
A Compound Motorized Blower Unit

A radically new design of blower has been developed by the L. J. Wing Manufacturing Company, general offices 14th street and 7th avenue, New York, and main plant at Newark, N. J., known as their Type COM Blower.

By a 2-stage combination, the pressures (6″ or 7″ w.g.) and volumes required for forced draft and similar work are obtained at low, quiet, constant speeds, regulation of the air volume being secured by built-in control and redirecting vanes. The units are of simple construction, compact, efficient and have the driving motor self-contained. They are built for both horizontal and vertical mounting.

Realizing that simplicity is the essence of efficiency, especially so in the case of forced draft equipment, the engineers of the company have produced what is claimed to be a most dependable and fool-proof blower.

These units consist of a constant speed electric motor, with double extended shaft; two propeller type fan wheels, one mounted on each of the two extended shafts; an integral damper control and air re-directing mechanism built in between the two propeller fan wheels. The entire assembly is placed within a simple, rugged, cylindrical casing, arranged for ready accessibility.



WING TYPE COM BLOWER UNIT

They have many applications, especially forced draft service for either hand-fired boilers, stoker-equipped boilers, oil or gas-fired boilers, or for the secondary air supply of pulverized fuel burning boilers.

The integral damper mechanism permits precise control of the air delivery over a wide range with decreasing horse power. The control of dampers may be readily effected manually, or control can be obtained automatically by attachment to any of the standard automatic draft controls.

The entire unit is self-contained. The throw of a switch starts the blowers and all capacity regulation is obtained by merely adjusting the integral damper.

Due to the compactness of these units, they can usually be installed directly in the brick setting or concrete foundation walls of the boiler, thus eliminating all duct work. However, when floor mounting is required suitable feet are provided.

This unique blower solves the forced draft problem at low equipment cost, negligible installation cost and high operating efficiency.

Conducts Technical Sales Survey

Logan Grupelli, of the Technical Sales Division of the National Oil Products Company, of Harrison, N. J., is conducting a technical sales survey throughout the United States. Mr. Grupelli, who is sales promotion and advertising manager of the industrial sales department of the company, will visit paper and textile manufacturing centers.

Richard Bull Elected Director

At the March directors meeting of the Western Paper Merchants Association, Richard Bull, of Bradner Smith & Co., was elected a director to replace E. A. Damhorst, of the Irwin Paper Company, resigned.

Opens Electrical Display

An exhibit of electrical products for industry has been opened in the General Electric Building, 570 Lexington Avenue, New York. It brings together, in 7,000 square feet of floor space, a complete line of representative products of General Electric and its affiliates.

Cable, distribution equipment, fractional-hp. and integral motors, industrial control, industrial heating, lighting, meters and instruments, police radio, switchgear, transportation products, turbines and welding; the products of the Incandescent Lamp Department, Air Conditioning Department, and the Construction Material Division and the Plastics Division of the Appliance and Merchandise Department; and the products of the Trumbull Electric Company, General Electric X-Ray Corporation, Warren Telechron Clock Company, General Electric Vapor Lamp Company, Bailey Meter Company, Locke Insulator Corporation and Carbology Company are on display. Much of the equipment is in operation.

A generator voltage regulator is in operation, giving visitors the opportunity to see the stabilizing effect of a regulator on voltage surges. Three induction voltage regulators are also in operation.

A demonstrator shows the effect of voltage regulation on power and distribution lines, and a large panel shows why fuse co-ordination pays big dividends. Here fuses are made to blow in a fuse-cutout rack, demonstrating fuse co-ordination from the load to the supply.

The story of instruments is presented by means of a series of transparencies. Time switches, demand meters, recording instruments, portable instruments, small panel instruments, and watthour meters are represented in the exhibit.

By means of cable dumb-bell samples, visitors may test the strength of various rubber insulations both before and after undergoing heat, aging, and moisture tests. Stripped-down samples of cable show internal construction features.

In the motor exhibit, photographs show the various tests which G-E motors must pass before shipment. The center of the exhibit is an induction motor in a glass house, operating in cement dust blown about by a vacuum blower. On either side of this exhibit are tables, on which assembled and completely disassembled motors are shown.

An FP-19 automatic oil circuit recloser is in operation; bells ring when visitors accidentally cross the path of a photo-electric beam; manual, automatic, and float-switch controls of a disk-brake motor are demonstrated by means of a special control panel.

A different type of illumination, supplied by the incandescent lamp department, illuminates each bay to illustrate good industrial and commercial lighting

Airlines Service Discussed

Miss Ruth Phalen, hostess, and A. J. Garrity, sales manager of the American Airlines, Inc., were the guest speakers at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, which was held in the Empire Room of the Hotel Lexington, New York, on Monday.

Miss Phalen and Mr. Garrity discussed the many advantages and up-to-date comfort of modern air travel and answered many questions from the audience.

This session was voted one of the most interesting that the Salesmen's association has held for some time past.

Champion Reports Large Earnings

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, April 5, 1937.—A report was filed the past week by Controller J. L. Henson, Champion Paper and Fibre Company, showing consolidated net income, after deducting all charges for depreciation, depletion, all taxes (except surtaxes), interest, etc., and representing the amount available for preferred and common dividends, amounted to $472,338.07 for the third quarter of the fiscal year of this company.

The third quarter is represented by the twelve weeks ended January 1937. After deducting $107,307.69 for preferred dividends accrued during the same period, the remainder of the income, amounting to $365,030.38, represents the portion available for the common shares, being approximately 66 cents a share.

The net income of the consolidated companies for the forty weeks, ended January 31, 1937, computed similarly, amounted to $1,255,094.21, which, after deducting $357,692.31 for preferred dividends, leaves the amount available for common shares of $897,401.90, representing approximately $1.63 a share.

The same ratio of income for the remaining twelve weeks of the fiscal year would show approximately $2.12 of earnings a share.

The foregoing data are on the basis of the records of the consolidated companies, to which have been applied adjustments to correct any discrepancies of a material nature. A provision was not made for the Federal surtax on undistributed profits in view of the uncertainty of the amount to be required.

The Champion Paper and Fibre Company operates a coated paper mill in Hamilton; a pulp plant in Canton, North Carolina, and is just starting a new pulp mill at Pasadena, near Houston, Texas. The latter plant was completed at a cost of $3,500,000, including the cost of the site.

It is possible that a fully-equipped paper mill will be established on the same site. This improvement will involve an extremely large expenditure.

Ontario Mills Expansion

The Hon. C. W. Cox, of Port Arthur, Ont., who is Mayor of that city, says that at present plans are going ahead for the reorganization of the Abitibi Power and Paper Company. When completed the company will spend between six and eight million dollars in capital improvements to mills in Ontario. Mr. Cox added that the expenditures would be at the Fort William plant and the Thunder Bay mill in Port Arthur, about one million dollars being devoted to this purpose at each point. He further stated that he expected a most active year in the pulp and paper industry and in woods operations, as things were looking better than ever in these lines.

Henry C. Pardee Promoted

Harry C. Pardee has been appointed advertising manager of the Scott Paper Company, succeeding in that position William W. Tomlinson, recently resigned.

Mr. Pardee has been active in the distribution and advertising divisions of Scott Paper Company for twelve years. He became assistant advertising manager in 1934 and, during Mr. Tomlinson's leave of absence of the past year, has been active advertising manager of the business.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 3, 1937

CIGARETTE PAPER

De Manduit Paper Corp., *Ile de France,* Havre, 2 cs.; Champagne Paper Corp., *Ile de France,* Havre, 949 cs.; M. Speigel & Sons, *Conti de Savoia,* Genoa, 19 cs.; R. J. Reynolds Tobacco Co., *Washington,* Havre, 7 cs.; De Manduit Paper Corp., *Washington,* Havre, 175 cs.; Standard Products Corp., *Washington,* Havre, 33 cs.

WALL PAPER

Rohner Gehrig & Co., *Bergensfjord,* Oslo, 5 ctns.; ———, *Bremen,* Bremen, 1 cs.; F. Blank, *Washington,* Hamburg, 9 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Shipper,* London, 1 cs., 1 ble.

NEWSPRINT

N. Y. Evening Journal, *Pr. Harding,* Hamburg, 315 rolls; Jay Madden Corp., *Pr. Harding,* Hamburg, 292 rolls; Jay Madden Corp., *Uddeholms,* Hango, 322 rolls; N. Y. Evening Journal, *Markland,* Liverpool, N. S., 561 rolls; N. Y. Tribune, *Markland,* Liverpool, N. S., 1646 rolls; World Telegram, *Markland,* Liverpool, N. S., 597 rolls; Brooklyn Daily Eagle, *Markland,* Liverpool, N. S., 543 rolls; Parsons & Whittemore, Inc., *Markland,* Liverpool, N. S., 370 rolls; Jay Madden Corp., *Washington,* Hamburg, 96 rolls; Perkins Goodwin & Co., *Washington,* Hamburg, 466 rolls.

PRINTING PAPER

Oxford University Press, *Antonia,* Liverpool, 21 cs.; F. C. Strype, *Cameronia,* Glasgow, 1 cs.; R. J. Saunders, *Washington,* Southampton, 3 cs.

WRAPPING PAPER

Jay Madden Corp., *Pr. Harding,* Hamburg, 288 rolls; ———, *Uddeholms,* Gothenburg, 3365 rolls; Blauvelt Wiley Paper Manfg. Co., *Uddeholms,* Gothenburg, 80 rolls; Guaranty Trust Co., *Uddeholms,* Gothenburg, 176 bls., 1081 rolls; Lunham & Reeve, Inc., *Uddeholms,* Norrkoping, 71 bls.

DRAWING PAPER

H. Reeve Angel & Co., Inc., *American Shipper,* London, 2 cs.; Saentis, Inc., *Spaarndam,* Rotterdam, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Shipper,* London, 19 cs.; Heemsoth Kerner Corp., *Washington,* Havre, 1 cs.; ———, *Deutschland,* Hamburg, 7 cs.

COLORED PAPER

D. C. Andrews & Co., *Bremen,* Bremen, 2 cs.; Hensel Bruckman & Lorbacher, *Deutschland,* Hamburg, 4 cs.

SURFACE COATED PAPER

Gevaert Co. of America, *Westernland,* Antwerp, 39 cs.; Globe Shipping Co., *Bremen,* Bremen, 5 cs.; Globe Shipping Co., *Washington,* Bremen, 52 crates, 1 cs.

METAL COATED PAPER

K. Pauli Co., *Deutschland,* Hamburg, 17 cs.

COATED PAPER

W. J. Byrnes, *Pr. Harding,* Southampton, 7 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Antonia,* Liverpool, 8 cs. (duplex), 5 cs. (simplex).

DECALCOMANIAS

Sellers Transportation Co., *Bremen,* Bremen, 42 cs.; L. A. Consmiller, *Bremen,* Bremen, 7 cs.; ———, *Bremen,* Bremen, 5 cs.

TRANSFER PAPER

D. C. Andrews & Co., *Deutschland,* Hamburg, 1 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., *Antonia,* Liverpool, 5 cs.; W. J. Byrnes, *Antonia,* Liverpool, 3 cs.; F. C. Strype, *Antonia,* Liverpool, 2 cs.; Irving Trust Co., *Hokkai Maru,* Kobe, 3 cs.; ———, *Conti di Savoia,* Genoa, 55 cs.; Atlantic F'd'g Co., *Deutschland,* Hamburg, 8 cs.

WRITING PAPER

Globe Shipping Co., *Pr. Harding,* Hamburg, 6 cs.

GUMMED PAPER

Heemsoth Kerner Corp., *Bremen,* Bremen, 4 cs.

PAPER TUBES

———, *Deutschland,* Hamburg, 188 pkgs.

MISCELLANEOUS PAPER

Diamond Match Co., *American Shipper,* London, 10 bls.; National City Bank, *Hokkai Maru,* Yokohama, 28 cs.; A. Giese & Son, *Ile de France,* Havre, 68 bls.; Globe Shipping Co., *Ile de France,* Havre, 2 cs.; Japan Paper Co., *Conti di Savoia,* Genoa, 12 cs.; Keller Dorian Paper Co., *Excambion,* Marseilles, 20 cs.; Jay Madden Corp., *Washington, Hamburg,* 8 rolls; Keuffel & Esser Co., *Washington,* Hamburg, 20 cs.; Dingelstedt & Co., *Washington,* Hamburg, 21 cs.

RAGS, BAGGINGS, ETC.

D. Benedetto, Inc., *Pipestone County,* Dunkirk, 47 bls. rags; Castle & Overton, Inc., *Pipestone County,* Dunkirk, 178 bls. new cuttings; Continental Bank Trust Co., *J. Jadot,* Antwerp, 86 bls. bagging; Hicks Costarino Co., Inc., *City of Flint,* Manchester, 45 bls. new cuttings; E. J. Keller Co., Inc., *Schodack,* ———, 79 bls. rags, 83 bls. new cuttings;

D. Benedetto, Inc., *Schodack,* Havre, 24 bls. rags; R. Blank, *Schodack,* Havre, 332 bls. rags; ———, *Schodack,* Havre, 63 bls. rags; Castle & Overton, Inc., *Schodack,* Havre, 88 bls. rags, 32 bls. new cuttings, 36 bls. bagging; Manufacturers Trust Co., *Schodack,* Havre, 55 bls. rags; D. Benedetto, Inc., *Schodack,* St. Nazaire, 163 bls. rags; R. Blank, *Schodack,* St. Nazaire, 220 bls. rags; ———, *Schodack, St.* Nazaire, 59 bls. rags; D. Benedetto, Inc., *Schodack,* Bordeaux, 187 bls. rags; ———, *Schodack,* Bordeaux, 50 bls. rags; J. Cohen & Son Co., Inc., *Antonia,* Liverpool, 11 bls. rags; J. Cohen & Son Co., Inc., *American Shipper,* Liverpool, 32 bls. paper stock; Eisenberg Rubin, Inc., *Uddeholms,* Gothenburg, 4 bls. rags; Manufacturers Trust Co., *Eastern Prince,* B. Ayres, 45 bls. rags; ———, *Eastern Prince,* B. Ayres, 80 bls. rags; Banco Coml Italiane Trust Co., *Westernland,* Antwerp, 143 bls. jute waste; Philadelphia National Bank, *Westernland,* Antwerp, 96 bls. rags; ———, *Westernland,* Antwerp, 104 bls. bagging; Manufacturers Trust Co., *Westernland,* Antwerp, 357 bls. flax waste; National City Bank, *Westernland,* Antwerp, 76 bls. flax waste; Chase National Bank, *Kalinin,* Odessa, 1342 bls. flax waste; Amtorg Trading Corp., *Kalinin,* Odessa, 1570 bls. rags; Felming Jaffee, Ltd., *Kalinin,* Odessa, 2670 bls. flax waste; Guaranty Trust Co., *Idefjord,* Alexandria, 325 bls. rags; Philadelphia National Bank, *Idefjord,* Alexandria, 141 bls. rags; ———, *Idefjord,* Piraeus, 145 bls. rags, 59 bls. bagging; Manufacturers Trust Co., *Tai Yang,* Kobe, 100 bls. cotton waste; Banco Coml Italiane Trust Co., *Deutschland,* Hamburg, 54 bls. rags; R. & V. Miller, *Spaarndam,* Rotterdam, 10 bls. rags.

OLD ROPE

E. Butterworth & Co., Inc., *City of Flint,* Liverpool, 72 coils; Banco Coml Italiane Trust Co., *American Shipper,* Liverpool, 111 bls.; W. Steck & Co., *Spaarndam,* Rotterdam, 46 coils.

CASEIN

———, *Ile de France,* Havre, 200 bags.

WOOD PULP

Absorbo Beer Pad Co., *Pr. Harding,* Hamburg, 150 bls. wood pulp; The Borregaard Co., Inc., *Bergensfjord,* Sarpsborg, 1118 bls. sulphate; E. M. Sergeant Pulp & Chemical Co., *Bergensfjord,* Oslo, 900 bls. chemical pulp; Chase National Bank, *Bergensfjord,* Oslo, 300 bls. sulphite; Price & Pierce, Ltd., *Uddeholms,* Gothenburg, 1000 bls. dry pulp; Price & Pierce, Ltd., *Uddeholms,* Gothenburg, 325 bls. sulphite; Perkins Goodwin & Co., *Uddeholms,* Gothenburg, 300 bls. chemical pulp; Perkins Goodwin & Co., *Uddeholms,* Gothenburg, 300 bls. sulphite, 279 bls. sulphate; Absorbo Beer Pad Co., *Washington,* Hamburg, 116 bls. wood pulp; Bank of The Manhattan Co., *Deutschland,* Hamburg, 246 bls. sulphite 49 tons; N. Y. Trust Co., *Deutschland,* Hamburg, 125 bls. wood pulp 25 tons; Castle & Overton, Inc., *Deutschland,* Hamburg, 2530 bls. wood pulp 506 tons; Bulkley Dunton Pulp Co., Inc., *Black Tern,* ———, 540 bls. wood pulp.

WOOD PULP BOARDS

———, *Washington,* Hamburg, 203 bls.

BOSTON IMPORTS

WEEK ENDING APRIL 3, 1937

Horton & Hubbard Manfg Co., *Uddeholms,* Gothenburg, 45 bls. wood pulp boards; Castle & Overton, Inc., *Uddeholms,* Hango, 7500 bls. sulphite; Stone & Downer Co., *Uddeholms,* Hango, 146 rolls newsprint; International Purchasing Co., *Spaarndam,* Rotterdam, 58 coils old rope; S. H. Waldstein, *Spaarndam,* Rotterdam, 120 bls. cotton waste; Bulkley Dunton Pulp Co. Inc., *Idarwald,* ———, 1450 bls. wood pulp; Bulkley Dunton Pulp Co. Inc., *Laura C.,* ———, 300 bls. wood pulp; Bulkley Dunton Pulp Co. Inc., *Stureholm,* ———, 5220 bls. wood pulp; Bulkley Dunton Pulp Co. Inc., *Frankfurt,* ———, 1250 bls. wood pulp; Price & Pierce, Ltd., *Toronto,* ———, 600 bls. unbleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 3, 1937

———, *City of Flint,* Liverpool, 251 bls. bagging; Union Waste Co., *Schodack,* Bordeaux, 59 bls. rags; Castle & Overton, Inc., *Schodack,* Bordeaux, 578 bls. rags; Whitaker & Daniels, *Schodack,* Bordeaux, 500 bls. rags; D. Benedetto, Inc., *Schodack,* Bordeaux, 103 bls. rags; D. Benedetto, Inc., *Schodack,* St. Nazaire, 189 bls. rags; Castle & Overton, Inc., *Schodack,* St. Nazaire, 147 bls. rags; ———, *Schodack,* St. Nazaire, 43 bls. rags; R. Blank, *Schodack,* St. Nazaire, 149 bls. rags; ———, *Schodack,* Havre, 192 bls. rags; E. J. Keller Co. Inc., *Schodack,* ———, 1859 bls. rags; Castle & Overton, Inc., *Spaarndam,* Rotterdam, 52 bls. rags; D. Benedetto, Inc., *Spaarndam,* Rotterdam, 206 bls. rags; Bulkley Dunton Pulp Co. Inc., *Bochum,* ———, 1500 bls. wood pulp.

CAMDEN IMPORTS

WEEK ENDING APRIL 3, 1937

Lagerloef Trading Co., *Uddeholms,* Hango, 8530 bls. sulphate.

BALTIMORE IMPORTS

WEEK ENDING APRIL 3, 1937

———, *City of Flint,* Liverpool, 113 coils old rope; Congoleum Nairn Co., *Schodack,* Bordeaux, 187 bls. rags; Congoleum Nairn Co., *Schodack,* St. Nazaire, 44 bls. rags; Congoleum Nairn Co., *Schodack,* Havre, 601 bls. rags; Bankers Trust Co., *Spaarndam,* Rotterdam, 1200 bls. sulphite; Brown Bros. Harriman & Co., *Spaarndam,* Rotterdam, 1200 bls. sulphite; ———, *Spaarndam,* Rotterdam, 360 bls. wood pulp; Philadelphia National Bank, *Spaarndam,* Rotterdam, 191 bls. bagging; Bulkley Dunton Pulp Co. Inc., *Etna,* ———, 4000 bls. wood pulp; Bulkley Dunton Pulp Co. Inc., *Helgoy,* ———, 8650 bls. wood pulp; Bulkley Dunton Pulp Co. Inc., *Rio Verde,* ———, 4091 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING APRIL 3, 1937

Irving Trust Co., *City of Flint,* Manchester, 66 bls. bagging; ———, *City of Flint,* Manchester, 123 bls. bagging; Price & Pierce, Ltd., *City of Hamburg,* ———, 5200 bls. unbleached sulphite.

NEW ORLEANS IMPORTS

WEEK ENDING APRIL 3, 1937

Lagerloef Trading Co., *Uddeholms,* Hango, 520 bls. mechanical pulp.

BEAUMONT IMPORTS

WEEK ENDING APRIL 3, 1937

Enterprise Co., *Uddeholms,* Hango, 865 rolls newsprint; H. Reeve Angel & Co. Inc, *Uddeholms,* Hango, 209 rolls newsprint.

HOUSTON IMPORTS

WEEK ENDING APRIL 3, 1937

Scripps Howard Supply Co. Inc., *Uddeholms,* Hango, 191 rolls newsprint.

Mundt

Perforated Screens
For Pulp and Paper Mills

Steel, Copper, Brass
Bronze, Monel Metal
and Other Alloys
Punched for Centrifugal
and Rotary Screens,
Pulp Washers, Drainer
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IS *ALWAYS* STANDARD!

When a Company has maintained the most rigid of production standards over a period of 55 years . . . you can rely upon its name and on its products! Scientific methods . . . exacting supervision have made SOLVAY LIQUID CHLORINE a bleaching agent on which you can depend . . . that you can take for granted will be always pure, always uniform, when you receive it!

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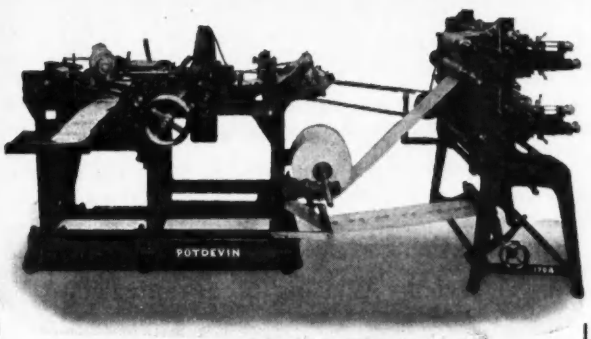

ANOTHER *HIGH-SPEED*
POTDEVIN COMBINATION

A POTDEVIN 2-color ANILINE web printing press plus a small POTDEVIN flat & square high-speed specialty bag machine—this combination gives the highest degree of satisfaction for manufacturing bags for ice-cream pops, peanuts, candy and small novelties.

These machines, which produce over 650 printed bags per minute, are in use all over the United States.

This unit may also be equipped with a 2-color oil-ink press, producing 4-color printed bags in one operation.

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FOR COVER PAPERS

Helmerco Blues, like the Helmerco Reds and Greens, produce excellent results in the making of cover papers. If you want Blues that are extremely fast to light, have instant dispersion, and produce brilliant shades, write us today for samples of the Helmerco Blues.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 7, 1937.

Business in the local paper market is fairly steady. Demand for the various standard grades of paper is well sustained. Offerings from the paper mills are still rather limited. Sales forces of the leading paper organizations continue optimistic. Prices are generally holding to schedule.

The position of the newsprint paper market is improving. Numerous manufacturers in Canada and the United States have followed the example of the International Paper Company in announcing an advance in quotations to $50 per ton, delivered New York, for the first six months of 1938.

Steadiness prevails in the fine paper market. Demand for book, cover, bond and ledger papers is holding up well. Tissues are moving into consumption in good volume for the season. The coarse paper market is sharing the general business improvement. Paper board quotations are firm.

Mechanical Pulp

The ground wood pulp market is decidedly stronger than of late. Manufacturing operations in the United States and Canada are keyed to current requirements, as far as possible. No. 1 imported dry mechanical pulp is now quoted at from $40 to $42 per ton, on dock, Atlantic ports.

Chemical Pulp

More advances are reported in the chemical pulp market. Prime bleached sulphite is now quoted at from $2.90 to $4.25; easy bleaching sulphite at from $3.50 to $3.75; strong unbleached sulphite at from $3.40 to $3.60; and kraft No. 1 at from $2.50 to $3.10, on dock, Atlantic ports.

Old Rope and Bagging

The old rope market continues to display strength. Demand for both domestic and imported old manila rope is fairly heavy. Prices are steady to firm. The outlook for the bagging market is better and demand from the mills is expected to expand materially. Both gunny and scrap bagging are slightly firmer.

Rags

Conditions in the domestic rag market are fairly satisfactory. Paper mill demand for new and old cotton rags is insistent. No. 1 new white shirt cuttings are arousing interest in both home and export markets. Other grades are moving freely. The imported rag market is practically unchanged.

Waste Paper

The local paper stock market is exhibiting a strong undertone. Board mill demand for the lower grades is fairly heavy and quotations are quite firm. No. 1 mixed paper is now quoted at from 70 to 75 cents, f.o.b., New York. The higher grades of waste paper are steady, including hard and soft white shavings.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Supplies are going forward into consumption freely for the season. Despite the usual competition for desirable orders prices are holding to previously quoted levels, in most instances.

New Agent for Flame-Proofing

A new flame-proofing agent for paper and textiles just developed by the du Pont Company was demonstrated on Wednesday evening, March 31, at the du Pont Exhibition which is being held under the auspices of the Museum of Science and Industry in New York City.

Paper and textiles treated with this new chemical are highly flame-proof, and at the same time have a soft, pleasing "feel." In addition, this new chemical does not have any appreciable influence on the strength of paper and textiles, or on the dyestuffs commonly used.

In announcing this new chemical, it is pointed out that paper and textiles treated with fire retardants are not fireproof in the sense that they cannot be burned, but are flame-proof in that they do not blaze or smolder, and accordingly will not spread a fire.

During recent years much research has been directed to the development of a satisfactory flame-proofing agent for paper and textiles, but up to the present all materials used for this purpose have had certain disadvantages which limited their usefulness.

The du Pont Company expects to begin the manufacture of this new material on a commercial scale in the near future.

American Writing Reorganization

[FROM OUR REGULAR CORRESPONDENT]

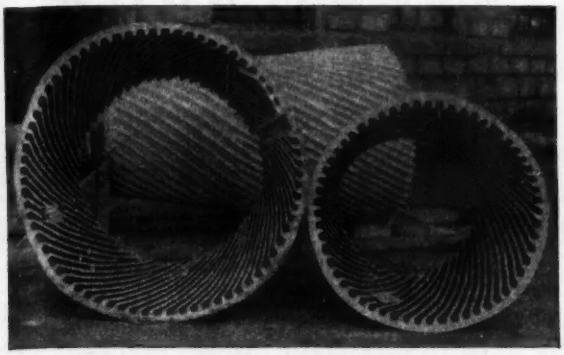
HOLYOKE, Mass., April 6—Announcement was made at the office of the American Writing Paper Company today that the administrative policies following the recent reorganization would be under the supervision of Thomas H. Blodgett, chairman of the board of directors, and that Leon M. Yoerg, Russell S. Madden and W. J. Norton would head the departments of manufacturing, sales and treasury respectively.

Peter Freedman, of New York, continues to represent Mr. Blodgett at the main offices in Holyoke. Freed of obligation to pay fixed interest on bonds for four years, and with added working capital the new corporation plans to further develop and intensify its program of mill improvements.

New General Refractories Distributor

General Refractories Company announce the appointment of H. W. Porter Co., Inc., Newark, New Jersey, as distributor in the Newark area. H. W. Porter & Co., Inc., will carry a complete stock of refractories.

REG. U.S. PAT. OFFICE "POSITIVE" TRADE MARK



Spiral Type Jordan Fillings

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OUR SPECIALTY IS JORDAN FILLINGS

SPIRAL TYPE JORDAN FILLINGS
TWIN SPIRAL BAR JORDAN FILLINGS
THE OLD TYPE BAR JORDAN FILLINGS

Jordan fillings for every kind of stock, and for every known trade name and size Jordan. The bars, made of our stainless metal, resist the action of chemicals; also plain to meet the requirement in rough stock mills.

Place your refining problem up to us. Our high speed refiners are built for belt or V-belt drive; also for direct connected.

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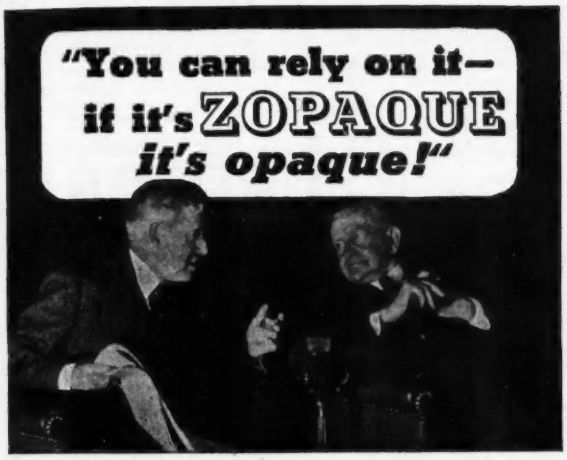

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 7, 1937.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Most of the business transacted in the bleaching powder market was along routine lines. Prices are generally maintained at formerly quoted levels. Bleaching powder is selling at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN.—The casein market is fairly active. Domestic standard ground is now quoted at 16 and finely ground at 16½ cents per pound; while Argentine standard ground is selling at 18½ and finely ground at 19 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Paper mill demand for caustic soda is moderately active. The contract movement is normal for the season. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.95 to $3 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Demand from the paper mills is brisk. Prices are steady. Imported china clay is quoted at from $15 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE.—Trading in the chlorine market is brisk. The contract movement is well up to average for the season. Prices are holding to formerly quoted levels. Chlorine is selling at from $2.15 to $2.25 per 100 pounds, in tank cars, at works.

ROSIN.—The rosin market is stronger. Paper making gum rosin is now quoted at $8.25 and wood rosin at $8.50 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $3.69 per 100 pounds, in tank cars, at works.

SALT CAKE.—Conditions in the salt cake market are improving. Prices remain steady. Salt cake is quoted at from $12 to $13; chrome salt cake at from $11 to $12 per ton, at works; while imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is fairly buoyant. Demand from the paper mills is insistent. Prices are holding to schedule. Quotations on soda ash, in car lots, at works, per 100 pounds, are still as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Business in the starch market is normal for the time of year. Demand from the mills is fairly well sustained. Prices are steady to firm. Special paper making starch is quoted at $4 per 100 pounds, in bags; and at $4.27 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is irregular. Demand from the paper mills is routine. Prices continue steady. Commercial grades are quoted at from $1.35 to $1.60; while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Yearly contracts are quoted at $18 per long ton, on orders of 1,000 tons, or over, and $20 on smaller quantities. On spot and near by car loads the quotation is $21 per ton. All quotations are in car lots, at works.

TALC.—Steadiness prevails in the local market. Demand from the paper mills is normal. Prices continue steady. Domestic talc is quoted at from $15 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers—Delivered Zone 1

	Bonds		Ledgers
100% Rag Ext. No. 1	.36		.37
100% Rag	.29	@	.30
75% Rag	.22	@	.23
65% Rag	.19	@	.20
50% Rag	.15½	@	.16½
25% Rag	.13	@	.14

Sulphite Bond & Ledgers—Delivered Zone 1

	Bonds		Ledgers
No. 1 Sulphite	8.00	@	9.00
No. 2 Sulphite	7.00	@	8.00
No. 3 Sulphite	6.75	@	7.75
No. 4 Sulphite	6.50	@	7.50

Book, B Grade, Cased (f.o.b. mill less carload freight allowed)

S. & S. C.	6.00	@	—
S. & S. C. Litho	6.25	@	—
M. F.	5.75	@	—
No. 4 Coated and Enamel	7.00	@	—
No. 4 Coated Litho	7.00	@	—

Tissues—Per Ream—

White No. 1	.95	@	—
White No. 1 M. G.	.92½	@	—
White No. 1½	.67½	@	—
White No. 2	.62½	@	—
Anti-arnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.62½	@	—
Unbleached Toilet	2.60	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—

Roll, contract	42.50	@	—
Sheets	47.50	@	—

Kraft—

No. 1 Northern	5.25	@	5.75
Standard	5.00	@	—
Southern	5.00	@	—
Glazed	4.50	@	—
Striped	4.75	@	—

Boards, per ton—

News	47.50	@50.00
Chip	45.00	@47.50
Sgl. Mla. Ll. Chip	55.00	@60.00
Jute Lined Chip	55.00	@60.00
Kraft Linera	65.00	@67.50
White Pat. Coated	67.50	@70.00
Binders Boards	70.00	@75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	33.00	@36.00
Dry	40.00	@42.00
(Delivered)		
No. 1 Domestic and Canadian	33.00	@36.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.90	@	4.25
Prime Qualities—			
Easy-Bleaching Sulphite	3.50	@	3.75
Strong Unbleached Sulphite	3.40	@	3.60

(On Dock, Atlantic Ports)

Kraft Bleached	3.50	@	3.75
Kraft Light & Strong	2.35	@	3.25
Kraft No. 1	2.50	@	3.10
Kraft No. 2	2.25	@	2.50
(F.o.b. Pulp Mill)			
Kraft Domestic	2.50	@	3.00
(Delivered)			
Soda Bleached	2.90	@	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	9.00	@	9.25
Silesias No. 1	6.75	@	7.00
New Unbleached	9.25	@	9.50
Blue Overall	7.00	@	7.25
Fancy	3.50	@	3.75
Washables	2.25	@	2.50
Mixed Khaki Cuttings	3.50	@	3.75
O. D. Khaki Cuttings	4.25	@	4.50

Old Rags

White, No. 1—			
Repacked	3.50	@	3.75
Miscellaneous	3.00	@	3.25
White, No. 2—			
Repacked	2.50	@	2.75
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00
Roofing Rags—			
No. 1	Nominal		
No. 2	1.75	@	1.85
No. 3 (bagging)	1.45	@	1.55
No. 4	1.45	@	1.55
No. 5A	1.35	@	1.45

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.50
New Mixed Cuttings	2.00	@	2.25
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxfords	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.25	@	2.50
French Blue Linens	3.50	@	4.00
German Blue Linens	2.50	@	2.75
German Blue Cottons	2.00	@	2.25
Checks and Blues	2.00	@	2.25
Linsey Garments	2.25	@	2.35
Dark Cottons	2.15	@	2.25
Old Shopperies	1.75	@	2.00
New Shopperies	1.75	@	2.00
French Blues	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.25	@	2.35
Domestic	2.15	@	2.25
Wool Tares, light	1.75	@	1.85
Wool Tares, heavy	2.20	@	2.35
Bright Bagging	1.70	@	1.75
Manila Rope—			
Foreign	5.00	@	5.25
Domestic	5.00	@	5.25
Jute Strings	2.75	@	3.00
Sisal Strings	2.60	@	2.75
Mixed Strings	Nominal		

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.20	@	3.30
Ordinary Hard White No. 1	2.50	@	2.60
Hard White No. 2	2.20	@	2.30
Soft White No. 1	2.00	@	2.10
Flat Stock—			
Stitchless	1.25	@	1.30
Over issue Mag	1.25	@	1.30
Solid Flat Book	1.15	@	1.25
Crumbled No. 1	.95	@	1.05
Ledger Stock	1.30	@	1.35
New B. B. Chips	.55	@	.60
Manila—			
New Env. Cut	2.15	@	2.25
New Cuttings	1.60	@	1.70
Old Kraft Machine—			
Compressed bales	1.70	@	1.80
News—			
No. 1 White News	1.40	@	1.50
Strictly Overissue	.70	@	.85
Strictly Folded	.70	@	.80
No. 1 Mixed Paper	.70	@	.75

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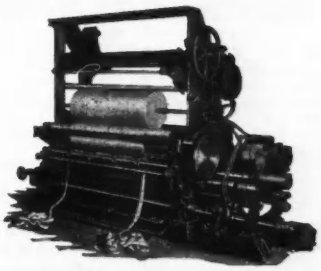

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Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—			
India	.15¼	@	.17¾
Belg. White Hemp	.16¼	@	.19¾
India Compress	.15¾	@	.16¼
Fine Polished—			
Fine India	.21	@	.23
Unpolished—			
Box	.11¼	@	.11¾
Paper Makers	.11	@	.13
Tube Rope	.12	@	.14¾
Wall Paper	.13	@	.13¾
Wrapping	.16	@	.20
Soft Fiber Rope	.14¼	@	.14¾
(Hard Fibre)			
Bond	.13½	@	.22
Anchor	.13	@	.14½
Manila	.21	@	.28

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M.F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.75	@	—
Coated Lithograph	6.75	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	42.50	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.08	@	.08½
New White, No. 2.	.04½	@	.05
Light Silesias	.05½	@	—
Silesias, No. 1	.04½	@	.05
Black Silesias, soft.	.03½	@	.04
New Unbleached	.06	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.07	@	.07½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.03	@	—
New Black Soft	.04	@	.04½
New Light Seconds	.03½	@	.04
New Dark Seconds	2.00	@	2.25
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	.03¼	@	.04
Corduroy	.02	@	.02¼
New Canvas	.04	@	.04½
New Black Mixed.	.02	@	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.20	@	2.25
Domestic No. 1	2.00	@	2.10
Domestic No. 2	1.90	@	2.00
Roofing bagging	1.75	@	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	4.50	@	—
Sisal Rope	3.00	@	—
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.25	@	2.50
No. 2	1.00	@	1.10
Wool Tares, heavy	3.25	@	3.50
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	—	@	2.60
No. 2 Hard White.	2.20	@	2.25
No. 1 Soft White.	2.00	@	2.10
No. 2 Soft White.	1.75	@	—
No. 1 Mixed	—	@	.85
Solid Ledger Stock.	—	@	1.75
Ledger Stock, white.	1.75	@	—
Ledger Stock, colored	1.50	@	—
No. 1 Books, heavy	1.20	@	1.25
Manila Cuttings	1.80	@	1.90
Print Manila	.75	@	.85
Container Manila	.80	@	—
Kraft Paper	1.75	@	—
No. 1 Mixed Paper	.65	@	—
Straw Board Chip	.50	@	—
Binders Board Chip.	.50	@	—
Corrugated Board	.70	@	.80
Overissue News	.75	@	.80
Old Newspapers	.65	@	.70

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.65	8.65
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.25	7.25
No. 4 Sulphite	6.50	7.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.05¾	@	—
No. 2 Kraft	.05	@	—

(Delivered New England points)

Southern Kraft	.05	@	—
News Print Rolls	42.00	@	—
Straw Board, rolls	.009 42.50	@	45.00
Filled News Board	50.00	@	52.50
Chip Board	47.50	@	50.00
Single Manila Lined Chip	57.50	@	62.50
Single White, Patent Coated News Board (Bender)	70.00	@	77.50
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	75.00	@	80.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.20	@	2.35
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers	85	@	.90
No. 1 Books, heavy	1.40	@	—
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.60	@	1.70
Manila Env. Cuttings, extra quality	2.15	@	2.25
No. 1 Old Manila	.95	@	1.00
White Blank News	1.25	@	1.30
No. 1 Kraft	1.90	@	2.00
Mixed Papers	.60	@	.65
Print Manila	.75	@	.85
Container Manilas	.27½	@	—
Olds Newspapers	.65	@	.70
Overissue News	.50	@	.65
Box Board Chips	.40	@	.45
Transmission Rope	2.00	@	2.25
Corrugated Boxes	.95	@	1.05
Kraft corrugated boxes	1.80	@	1.85
Screening Wrappers	.60	@	.65

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	4.50	@	4.90
Domestic	3.00	@	3.30
Jute Rope	2.50	@	2.75
Soft Jute Strings	2.50	@	2.62½
Jute Carpet Threads	1.75	@	2.00
Gunny No. 1—			
Foreign	2.35	@	2.50
Domestic	2.10	@	2.20
Bleachery Burlap	4.25	@	4.50
Scrap Burlap—			
Foreign	2.15	@	2.25
Domestic	2.10	@	2.20
Scrap Sisal	2.50	@	2.60
Scrap Sisal for Shredding	2.75	@	2.90
Wool Tares, heavy	2.25	@	2.40
New Burlap Cuttings	2.85	@	3.00
Aust. Wool Pouches	2.90	@	3.00
Heavy Baling Bagging	2.40	@	2.75
Paper Mill Bagging	1.75	@	1.80
Bagging No. 2	1.70	@	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04	@	.04¼
New White No. 1.	.09	@	.09¼
New White No. 2.	.06¾	@	.07
Silesias No. 1	.07¾	@	.08
New Black Silesias	.04¼	@	.04½
Soft Unbleached	.09½	@	.09¾
Blue Cheviot	.07½	@	.07¾
Fancy	.03¾	@	.04
Washable	.03	@	.03¾
Cottons—According to grades—			
Blue Overalls	.07½	@	.07¾
New Black, soft	.04¼	@	.04½
Khaki Cuttings	.04¾	@	.05
O. D. Khaki	.05	@	.05¼
Corduroy	.03¼	@	.03½
New Canvas	.07¾	@	.08¼
B.V.D. Cuttings	.08¾	@	.09

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	1.70	@	1.80
No. 2	1.60	@	1.70
No. 3	1.30	@	1.35

Foreign Rags

(F. o. b. Boston)

Dark Cottons	2.10	@	2.20
New white shirt cuttings	6.75	@	7.50
Dutch Blues	3.00	@	3.15
New Checks and Blues	2.85	@	3.00
Old Fustians	2.85	@	3.00
Old Linsey Garments	2.50	@	2.65
New Silesias	6.50	@	7.00

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¾
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.60	@	.70
Solid Books	.50	@	.60
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1 Folded News	42½	@	.45
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	—
No. 1 Tints	.36½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	.14½	@	—
No. 4 Tints	.15½	@	—
No. 5 Bond—White	.10¾	@	—
No. 5 Bond—Tints	.11¾	@	—
No. 5 Bond—Golden Rod	.12¾	@	—
No. 5 Ledger—White	.11¾	@	—
No. 5 Ledger—Tints	.12¾	@	—
No. 6 Bond—White	.10	@	—
No. 6 Bond—Tints	.10½	@	—
No. 6 Bond—Golden Rod	.12	@	—
No. 7 Bond—White	.08¾	@	—
No. 7 Bond—Tints	.08¾	@	—
No. 7 Bond—Golden Rod	.10¾	@	—
Book—			
No. 1 M. F.	6.50	@	6.75
No. 2 M. F.	6.25	@	6.50
No. 3 M. F.	5.00	@	5.35
No. 1 S. C.	7.00	@	7.50
No. 2 S. C.	6.50	@	7.00
No. 3 S. C.	5.50	@	6.00
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	4.80	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	Nominal		
Sheets	Nominal		

Pulp

Ground wood	29.00	@	30.00
Unbleached Sulphite	52.00	@	—
Book (Class 1)	64.00	@	—
Writing (Class 2)	65.00	@	—
Select (Class 3)	66.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.00	@	—
Light and Crumpled Book Stock.	.90	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut	1.20	@	1.40
Printed Manilas	.55	@	—
Kraft	1.00	@	1.60
News and Soraps—			
Strictly Overissue	.65	@	—
Strictly Folded	.65	@	—
No. 1 Mixed Paper	.55	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09	@	.09¼
Fancy Shirt Cuttings	.03¾	@	.04